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THE TREATMENT OF FRACTURES OF THE MANDIBLE BY EXTERNAL PIN FIXATION

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The purpose of this article is to describe a method of treatment which has been used in over 150 cases of fractures of the mandible admitted to the Edenvale Hospital during the past 10 years, comprising both European and non-European cases, but predominantly non-Europeans. Almost without exception the fractures in non-Europeans have been due to assault. The method of external pin fixation has been used on all cases requiring immobilization.

CLASSIFICATION OF FRACTURE SITES

For descriptive and practical purposes we divide fractures of the mandible into:

A. *Fractures of the body:* 1. Incisor area. 2. Canine area. 3. Premolar area. 4. Molar area.

B. *Fractures of the upper ramus:* 1. The coronoid process. 2. The condyloid process. 3. The portion of the ramus immediately below these two processes.

C. *Fractures of the angle*, including fractures of the lower part of the ramus, and of the part of the body behind the last molar tooth.

An analysis has been made of the sites of fracture in our last 100 consecutive cases, and the results are as follows:

A. *Single Fractures.* There were 54 cases with single fractures, distributed as follows:

Incisor area 9, canine area 6, premolar area 4, molar area 17, angle 18.

B. *Double Fractures.* The remaining 46 patients had double fractures, with the following distribution:

Incisor + canine 1, incisor + premolar 1, incisor + molar 7, incisor + angle 5, incisor + upper ramus 5, canine + canine 1, canine + molar 7, canine + angle 5, canine + upper ramus 2, premolar + premolar 1, premolar + molar 3, premolar + angle 2, premolar + upper ramus 1, molar + molar 2, molar + upper ramus 1, molar + angle 1.

These figures show that the majority (65%) of single fractures occurred in the molar area and at the angle of the mandible. Another interesting fact that emerges is that fractures of the upper ramus were always associated with a second fracture elsewhere.

METHODS OF TREATMENT

Broadly speaking, the methods of treating fractures of the mandible may be divided into two groups, viz. (1) Intermaxillary fixation and (2) external splintage. For reasons which will be discussed, we employ the technique of external fixation which was advocated by Roger-Anderson.

Fractures requiring fixation are in general as follows: (1) Any fracture of the body with displacement or mobility. (2) All fractures of the angle.

Fractures not requiring fixation are the following: (1) Fractures of the upper ramus. (2) Fine crack fractures of the body without mobility or displacement. The last group are assessed by means of the 'bite test'; if the patient has the ability to bite firmly on a hard object without undue pain, fixation is not required.

Technique of External Pin Fixation

1. On admission, antibiotics are prescribed, because the fracture is nearly always compound into the mouth.

2. When the local swelling has subsided, i.e. after two or three days, and provided there is no infected wound or abrasion overlying the fracture, pinning is undertaken. The patient is given a general anaesthetic, with nasotracheal intubation and pharyngeal plugging.

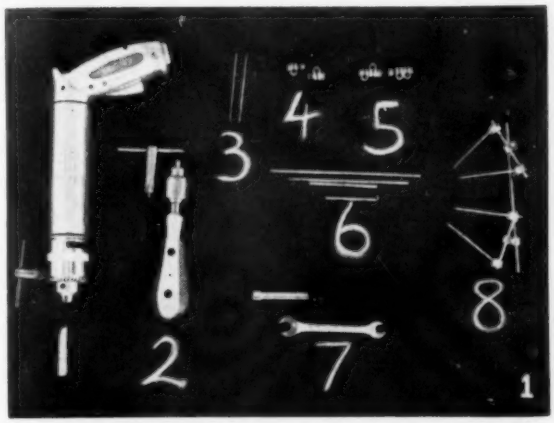


Fig. 1. The Roger-Anderson universal set. 1—air-driven power drill. 2—alternate manual introducer. 3—self-tapping pins. 4—single universal clamps. 5—double universal clamps. 6—cross bars of varying lengths. 7—spanners for tightening clamps. 8—2 units assembled.

3. The Roger-Anderson universal set, as illustrated in Fig. 1, is used.

4. The pins are driven by means of a power drill into the lower part of the body of the mandible, about $\frac{1}{4}$ inch above its inferior border. The outer cortex is penetrated and the inner cortex engaged by the self-tapping thread of the pin.

5. Two pins are driven into each fragment (the nearer being about $\frac{3}{4}$ inch from the fracture line), and their distal ends are then clamped to a short cross-bar, to form a unit. The cross-bar carries a double clamp between the pins, which is left free at this stage. The two pins comprising a unit are separated by about 1 inch, and are placed obliquely so as to have an included angle of about 60°. This

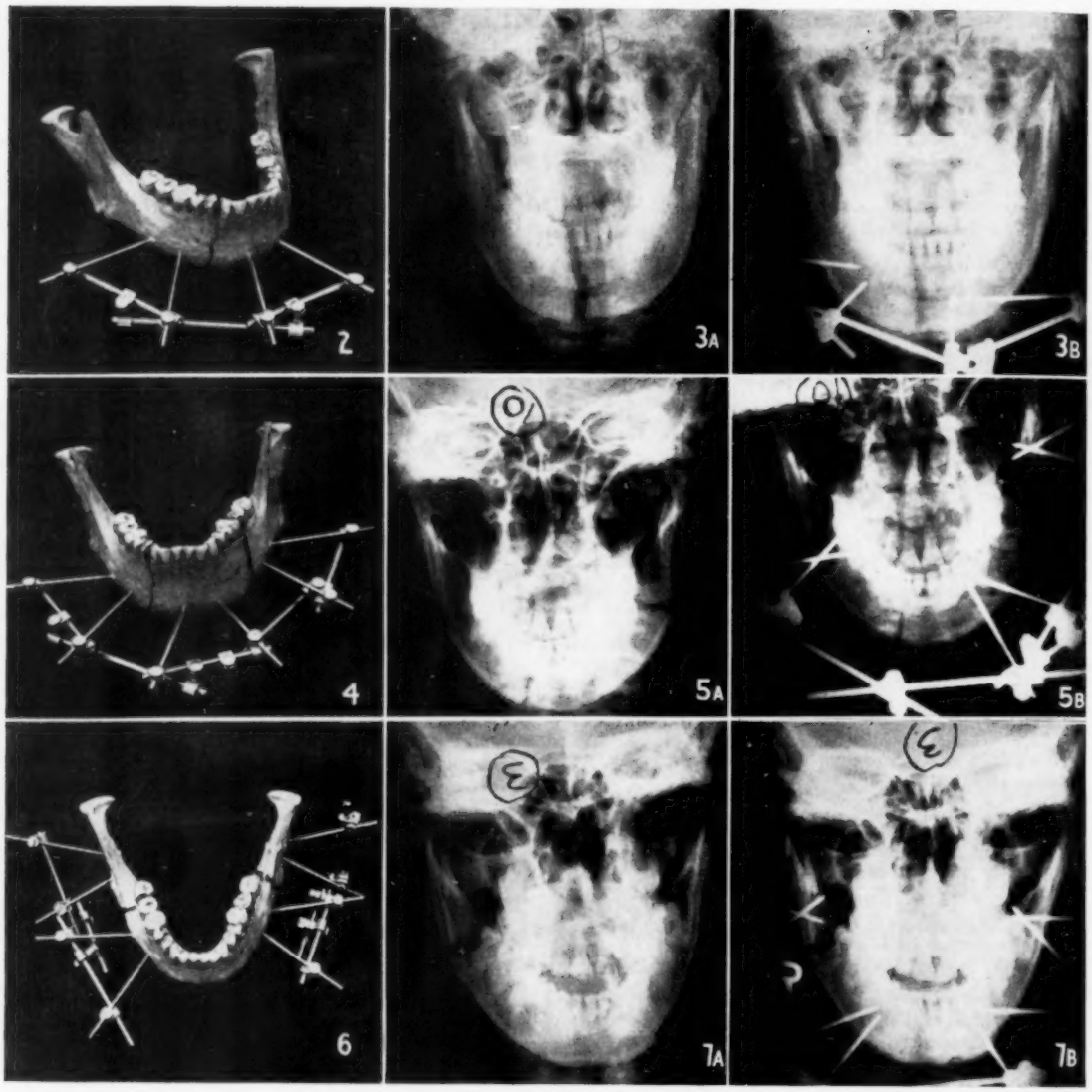


Fig. 2. Use of external fixation apparatus for single mandibular fracture. *Figs.* 3A and 3B. X-rays of single fracture of mandible without and with external fixation. *Fig.* 4. Use of external fixation apparatus for a double mandibular fracture, 3 universal sets being utilized. *Figs.* 5A and 5B. X-rays showing double mandibular fractures with and without external fixation. *Fig.* 6. Widely separated double mandibular fractures requiring four universal sets. *Figs.* 7A and 7B. X-rays of widely separated double mandibular fractures with and without external fixation.

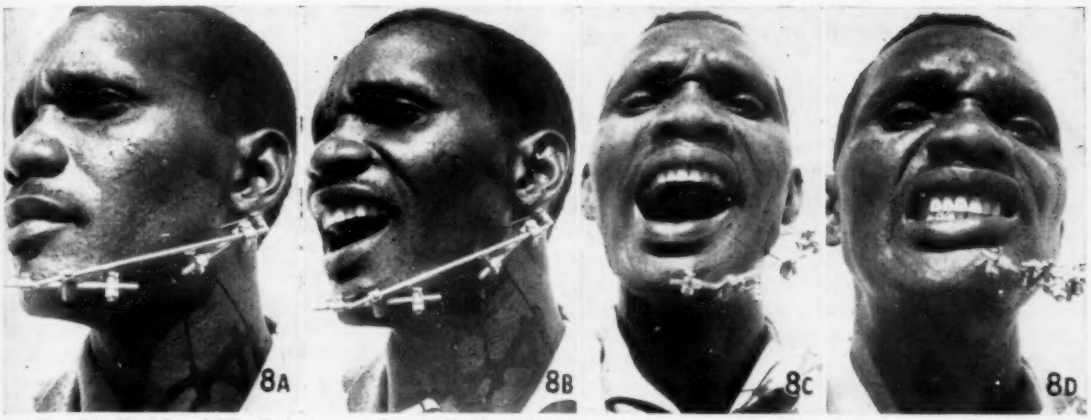
is illustrated on a model of a mandible (Fig. 2), and in the X-rays of an actual case (Figs. 3A and 3B).

6. A cross-bar of suitable length is engaged in the double clamp of each unit, and after manipulation of the fracture, and whilst the teeth are held in accurate occlusion, the clamps are tightened.

7. Where 2 fractures are to be immobilized, 3 units generally suffice, the cross-bar of the middle unit then carrying 2 double clamps (Figs. 4, 5A and 5B). Where, however, the fractures are widely separated (e.g., left angle and right molar region), the fractures are immobilized individually, 4 units being used (Figs. 6, 7A and 7B).

After-care

The patient is discharged 2–4 days after application of the splint (Figs. 8A, 8B, 8C and 8D). He is followed up weekly as an out-patient at the Fracture Clinic. If there is any malalignment of fragments or malocclusion, re-



Figs. 8A, 8B, 8C and 8D. Patient soon after application of external fixation apparatus. Note wide-open mouth and good teeth occlusion.

manipulation under general anaesthesia is carried out by loosening and re-tightening the clamps.

Occasionally a loose tooth in the fracture line, or one interfering with normal dental occlusion, needs extraction.

The pins are removed in the clinic after 6 weeks, and the patient discharged. There is firm fibrous union at this stage, although bony union does not occur for 12 months or longer.

Advantages of the Technique

1. The period of hospitalization is only 6 or 7 days.
2. The patient is able to enjoy a normal diet immediately the splint has been applied, because with this technique the fracture is immobilized without the mandible being immobilized (Figs. 8).
3. The patient is able to return to manual labour within a few days; this aspect is particularly important in non-Europeans, who are frequent victims of this injury and cannot afford to be off duty for any length of time.

Complications

These are few, and consist of occasional subcutaneous infection or osteitis. No case of osteomyelitis has occurred. In a few cases the pins have loosened in their tracks, but this has occurred at a late stage and has not interfered with the end-result. Such complications as may occur from infection along the pin track are negligible compared with the advantage that the patient is able to eat normally and return to his job within a week.

DISCUSSION

Intermaxillary fixation in one form or another carries the following drawbacks:

1. Inability to eat normally. Sometimes healthy teeth have to be sacrificed to allow of tube feeding.
2. Inability to hawk or expectorate, with consequent damming back of bronchial secretions and chest discomfort.
3. Excessive loss of weight due to inadequate diet.
4. Inability to perform heavy manual duties because of poor diet and inanition.
5. There is some difficulty in removing the wire fixation.
6. Should the patient require emergency surgery whilst the mandible is immobilized, the anaesthetic would present serious difficulties.

The criticisms that are levelled at the technique of external pin fixation in standard text-books on maxillo-facial injuries are (1) That the degree of immobilization of the fragments achieved is inadequate to guard against malunion, and (2) that the fixation is not sufficiently accurate to ensure perfect occlusion, and that even a very minor degree of residual malocclusion reflects improper treatment and will lead to dental caries.

As our practice is predominantly non-European and long-term follow-up is impracticable, we are not able to settle the question of delayed dental caries developing in these cases. We do feel however that the advantages of short hospitalization with early return to work and immediate resumption of full diet weigh heavily in favour of the adoption of this technique, particularly for the non-European patient.

We wish to thank Dr. J. D. Prestwich, Superintendent, Edenvale Hospital, for his permission to publish this paper.

'N ONGEWONE KOMPLIKASIE VAN 'N FRAKTUUR VAN DIE FEMURSKAG

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Op 24 Oktober 1958 is 'n 30-jarige Naturelleman tot die Algemene Hospitaal, Pretoria, toegelaat met 'n fraktuur van sy linker-femur.

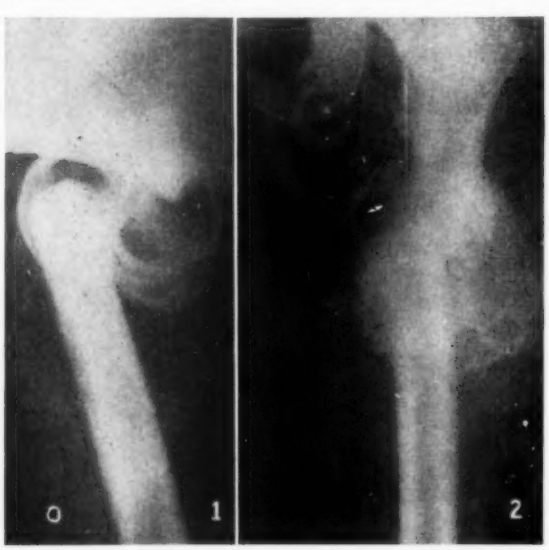
Die fraktuur was reeds presies 2 maande oud en is tot op daardie tydstip behandel in 'n Thomas-spalk met vel-trekking. Die geskiedenis was dat hy gegly en geval het op 26 Augustus 1958. Hy is na 'n naburige hospitaal geneem en röntgenfotos het 'n fraktuur getoon van die boonste derde van die skag van die linker-femur.

By toelating is weer röntgenfotos geneem. Die fragmente het nog 'n groot mate van verplasing getoon (Afbs. 1 en 2) met oorvleueling en verkorting. Oormatige kallus was

teenwoordig. Dit het egter nie na normale kallus gelyk nie, en groot sistiese holtes is daarin opgemerk.

Die pasiënt het nog gekla van pyn en daar was klinies reeds hegting. 'n Verspreide geswel was teenwoordig met rooiheid en warmte van die oorliggende vel. Die geswel was rubberhard en drukteer. Daar is nie opgelet na geruise of trilling nie. Die sirkulasie in die ledemate was goed.

Daar is besluit om 'n oop reduksie van die fraktuur te doen met intramedullêre fiksasie. Die snit is gemaak langs die anterolaterale kant van die dy. 'n Rubberharde massa kallus wat op plekke met die vinger ingedruk kon word, is ontbloot tussen die fragmente. Nadat die kallus versigtig met 'n osteotoom probeer verwyder is, is 'n groot gelokuleerde holte gevind, so groot soos 'n man se vuis. Dit het gladde glansende wande gehad, oordek met ongestolde bloed. In die holte was 'n groot hoeveelheid swart ongestolde bloed. Nadat dit uitgesuig was, is gevind dat die holte weer stadig opvul met donkerkleurige bloed. Met verdere disseksie is



Afbs. 1 en 2. Verplasing van die skag van die femur met oormatige kallus en sistiese holtes daarin

gevind dat die arteria profunda, sowel as die vena in die agterste wand van die kallus betrokke was en gedurende die disseksie is die vate geskeur en moes afgebind word. Hierna is die fraktuur gereduseer en met 'n Küntscher-tipe pen gefikseer. Heelwat meer as die gemiddelde hoeveelheid bloeding het tydens die operasie plaasgevind en 2 pinte bloed is toegedien.

Na die operasie is die klopping in linker-been met 'n mate van onrus gereeld dopgehou. Die dorsalis pedis het steeds swak kloppinge getoon, maar binne 2 uur was al die polse in die been sterk waarneembaar en geen tekens van versteurde sirkulasie meer waarneembaar nie. Die res van die postoperatiewe verloop was normaal.

In retrospek kan die eienaardige voorkoms van die röntgenfoto nou soos volg verklaar word: dit het die tipiese voorkoms van 'n aneurismale beensis.

Blykbaar was daar geringe beskadiging van die bloedvate in die gebied van die fraktuur, nl. die arteria en vena profunda femoris, waar 'n kommunikasie bestaan het tussen die fraktuur-hematoom en die genoemde vate. Met die ontstaan van nuwe been is die hematoom omsluit met balkies en as gevolg van die arteriële kloppinge in die hematoom is uitsetting van die nuwe been veroorsaak, tesame met die sogenaamde seepbel voorkoms. As daar voor die operasie versigtiger te werk gegaan was, sou 'n geruis sekerlik hoorbaar gewees het wat 'n mens op jou hoede sou kon stel vir die moontlikheid van 'n vaskulêre komplikasie. Nogmaals is die ou bekende feit weer beklemtoon: oop reduksies van hierdie frakture behoort nie aangepak te word sonder voldoende chirurgiese fasiliteite nie, selfs wanneer arteriële hegtings of oorplantings gedoen moet word. Genoegsame bloed vir oortapping moet ook binne vinnige bereik wees.

OPSOMMING

'n Geval is beskryf waar 'n aneurismale beensis 'n fraktuur van die boonste derde van die femur kompliseer. Die belang van voldoende chirurgiese fasiliteite en bloed vir oortapping by die hantering van hierdie gevalle word beklemtoon.

SUMMARY

An unusual complication of fracture of the femoral shaft is described. Pre-operative X-rays of a 2-month-old fracture showed cystic spaces in the callus. During operation for insertion of an intramedullary pin, a cystic space filled with blood was exposed in the callus between the bone fragments. The profunda femoris artery and vein were ligated as these vessels communicated with the cyst. The patient made an uneventful recovery.

The importance of having adequate facilities to deal with vascular complications during open reduction of this type of fracture, is stressed.

Graag wil ek teenoor dr. J. G. du Toit, Hoof van die Ortopediese Afdeling, en dr. I. S. de Wet, ortopediese chirurg, my dank betuig vir hulle hulp en aanmoediging. Ook wil ek dr. J. T. Vorster, Superintendent, Algemene Hospitaal, Pretoria, bedank vir sy toestemming om die geval te publiseer.

FORTHCOMING INTERNATIONAL MEDICAL CONFERENCES

The Thirteenth Annual Meeting of the World Federation for Mental Health will be held in Edinburgh from 7 to 12 August 1960 at the kind invitation of the Scottish Association for Mental Health. The general theme will be 'Action for mental health'. Further information will be sent, as it becomes available, to all member-associations, affiliated organizations and associates. Enquiries should be addressed to the Secretary-General, World Federation for Mental Health, 19 Manchester Street, London, W.1.

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EDITORIAL : VAN DIE REDAKSIE

SUFFOCATION CAUSED BY PLASTIC BAGS

The danger of suffocation from discarded plastic (polythene) garment bags, which are nowadays often used as improvised mattress and pillow covers, has become recognized as an important accidental hazard for infants and small children. There is, for instance, the possible danger of suffocation of small children who pull these bags over their heads while playing. A number of deaths caused in this way have been reported.

The *Journal of the American Medical Association* has drawn attention[1,2] to this danger and to deaths that have occurred, and may occur, when small children play with plastic bags and when infants become ensnared in the thin polythene film. It has been stated that an electrostatic charge, generated by friction from handling, causes the film to cling tightly to the nose and mouth. The child is then unable to free himself, and consequently suffocates.

A survey in the USA revealed that from January to March 1959 twenty deaths caused by suffocation from plastic materials were reported. For various reasons, however, these figures do not reflect the true incidence of deaths caused in this way. In some States reports of deaths cover only a period of two months; other States are not able to decode their records for such detailed information. The majority of the deaths caused by plastic bags occurred in infants under six months of age. Plastic sheets caused seven deaths, plastic pillow cases three deaths. In six cases where plastic sheets were the cause of death the mother had used them to cover the mattress in the infant's crib. According to a survey conducted by the United States Public Health Department during the first six months of 1959, 61 reported fatalities had been attributed to suffocation from plastic bags. Since then more deaths have been attributed to this cause. It is not unlikely that the number of deaths of children in the USA due to suffocation from plastic bags for the year 1959 may exceed a total of one hundred.

Various organizations are intensively studying ways and means of publicizing this danger and warning parents against the misuse of plastic bags. In America warnings, including spot announcements at various intervals, have been broadcast in radio and television programmes. The plastics industry has undertaken a nation-wide advertising campaign to inform the public of the dangers of misusing plastic bags. The dry cleaners have been urged to warn customers against giving plastic bags to children to play with, since the use of plastic dry cleaners' bags as waterproof sheets for babies' beds has caused many deaths. Manufacturers of plastic garment bags are supplying warning labels or are modifying the bags in order to provide a safer product. Furthermore, legislation has been introduced to enforce the use of warning labels. A comprehensive research programme is being carried out on the mechanics of this problem.

The fact that plastic products are so convenient to use suggests that they will continue to be used. Plastic film is popular and useful and is found in the home on a variety of household articles, clothes, produce, toys, and other objects. It is therefore imperative that parents take the following precautions:[2]

1. Do not give plastic bags or plastic film in any form to children to play with.
2. After plastic bags and wrappers have served their purpose, destroy them.
3. Do not use plastic film as slip covers for pillows and mattresses or as blanket protectors.

In an emergency the following steps are recommended. If the child's breathing has stopped, the most urgent need is to restore breathing. Send for help immediately and, in the meantime, try to resuscitate the child, using the mouth-to-mouth technique which is recommended by the American Red Cross Society as the most effective method of resuscitation.

Resuscitation by the mouth-to-mouth method should be carried out as follows: Place the child on his back and extend his head by pulling the lower jaw forwards. A towel or pillow under the shoulders will facilitate this procedure. Place one hand on the child's stomach to prevent overinflation. The operator now takes a deep breath, places his mouth over the child's mouth, holding the nostrils closed or covering the nose as well if the subject is a baby, and blows air into the child's lungs. This procedure is repeated 12-20 times a minute.

A special S-shaped airway with a curved flange* has recently been introduced for use by physicians, dentists, nurses, anaesthetists policemen, firemen, etc. This airway has application in unconscious non-breathing patients suffering from any form of asphyxia, and its use makes mouth-to-mouth breathing easier and more effective. It provides a breathing tube for the patient, and it has a mouth piece for the rescuer that eliminates direct oral contact—the strongest objection to direct mouth-to-mouth breathing.

* Manufactured by Messrs Johnson & Johnson (Pty). Ltd.

1. Medicine at Work (1959): J. Amer. Med. Assoc. **169**, 2021.
2. Special Report, Committee on Toxicology (1959): *Ibid.*, **170**, 1667.

NUWE MIDDELS EN KLINIESE TOETSE

As gevolg van die groot aantal middels wat daar deesdae gedurig op die mark kom, word kliniese toetse van hierdie middels al hoe meer 'n belangrike en verantwoordelike probleem. Die meeste etiese farmaseutiese firmas stel vir hulself hoëwetenskaplike vereistes by die navorsing na en vervaardiging van hierdie middels. Nadat middels op die mark gekom het, word dit egter in die eerste plek die verantwoordelikheid van die kliniese dokter om seker te maak dat die middels wel voldoen aan die terapeutiese vereistes wat van hulle verwag word.

In die mediese pers dwarsoor die wêreld verskyn daar nou gedurig berigte en artikels oor die gebruik van die

nuwe middels. Dit kan dus 'n goeie doel dien om 'n paar spesiale oorwegings te noem wat gedurig in hierdie verband in gedagte gehou moet word.

In die eerste plaas wil ons sekere basiese en etiese oorwegings noem. Die kliniese ondersoeker wat 'n toets onderneem moet seker maak daarvan dat, sover hy dit kan help, geen pasiënt werklik skade ly as gevolg van die uitvoering van die toets nie. Ook is dit gewens dat elke pasiënt behoort te weet dat hy 'n spesifieke toets ondergaan. Nou is dit wel waar dat hierdie oorweging dit soms moeilik maak om die faktor van onbewuste beïnvloeding uit te skakel. Om hierdie rede sou dit dus 'n goeie algemene reël wees om te sê dat die dokter geen toetse met pasiënte moet onderneem, tensy hy dit nie ook in gerustheid en met opregtheid ten opsigte van 'n intieme familielid sou onderneem nie.

Die dwaling van die ‚terapeutiese fout' word nog te dikwels begaan. Die argument dat omdat 'n pasiënt beter word na 'n behandeling, dit die spesifieke middel en die besondere metode van toediening is wat tot die beterskap lei, hou nie steek nie omdat daar baie ander faktore is wat 'n rol kan speel. Dit is dus duidelik dat die gebruik van behoorlike kontrolegevalle altyd noodsaaklik is. Dit is nie hier die plek om die bepaalde maniere van kontrolestudies te beskryf nie—elke navorser behoort bekend te wees met die maniere waarop betroubare kontrole en dubbel-kontroletoetse uitgevoer kan word. In algemene terme klink dit egter tog voor die hand liggend om te sê dat geen gevolgtrekking by die uitvoer van kliniese toetse van hierdie aard betroubaar kan wees tensy werklik vergelykbare groepe vergelyk word, en tensy die wisselende faktore wat ondersoek word, streng afgebaken en geïsoleer word nie.

Behalwe oorwegings ten opsigte van die pasiënte met wie die toetse onderneem word, moet die ondersoeker homself ook tevrede stel dat die pasiënt werklik die verwagte uitwerking van die middel ervaar. Byvoorbeeld, by die gebruik van middels waar die terapeutiese uitwerking afhang van 'n bepaalde vlak van oplossing van die middel in die bloed, moet die ondersoeker ook vasstel of daardie vlak van oplossing in die bloed gedurende die toets wel bereik word. Hierdie oorwegings is veral belangrik by die ondersoek van die uitwerking van middels op akute toestande.

In die geval van chroniese toestande waar die simptome dikwels of hoofsaaklik van subjektiewe aard is, soos byvoorbeeld, pyn in die geval van gewrigsontsteking, word die kwessie van bepaling van enige graad van verbetering besonder moeilik. Hier sal die ondersoeker 'n stelsel van bepalingswaardes moet uitwerk op so 'n manier dat die gegewens tog gekontroleer kan word deur ander ondersoekers en vergelykbaar is van een pasiënt tot 'n ander.

By die beantwoording van die vraag of verandering of verbetering van die siektetoestand waarvoor 'n bepaalde middel gebruik is, plaasgevind het, is die kwessie van die bepaling van die *graad* van die verbetering besonder belangrik. Tensy daar gebruik gemaak word van 'n skaal wat min of meer objektief is, en wat dus wetenskaplike vergelykingswaarde het, kan die gevolgtrekking baie misleidend word.

'n Laaste oorweging wat tog ook genoem moet word by die uitvoer van toetse, is die kwessie van moontlike finansiële verwikkeling van die ondersoeker. Enige geneesheer of kliniese beampte wat 'n toets onderneem, moet waak teen die moontlikheid van 'n aantyging van persoonlike voordeel. Om hierdie rede is dit as algemene beginsel gewens om geen finansiële steun aan te neem nie behalwe in sover as wat finansiële steun die objektiewe koste van die ondersoek kan dek.

Die nuwe ontwikkeling van die grootskaalse produksie van farmaseutiese middels het 'n nuwe tyd in die kliniese medisyne ingelei. Die moontlikheid bestaan dat baie groter sukses by die behandeling van baie meer toestande as wat in die verlede die geval was, bereik kan word. Die toestand van sake dui egter nie net op moontlike sukses nie, maar beklemtoon ook die besondere verantwoordelikheid wat daar nou rus op sowel die farmaseutiese firmas as op die dokters ten opsigte van die uiteindelike wel en wee van die gemeenskap wat deur hulle gedien word.

THE TREATMENT OF MYOTONIA CONGENITA

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Congenital myotonia was first described, in 1876, by Julius Thomsen,[10] a Danish physician, who was personally afflicted with it. He reported the same condition in 20 other members of his family, extending over 4 generations. At the time, comment was made on the frequent association with psychosis. Numerous cases and families have since been described. A large series has been reported by Thomasen,[8] including descendants of the original recorded case. The supposed psychotic accompaniment has largely been disproved. About one-quarter of the cases are familial and inherited as a Mendelian dominant. The characteristic feature of the disease is myotonia, which may manifest itself during childhood, producing difficult and delayed walking, but more usually showing first signs between the ages of 6 and 12 years, becoming more pronounced at the time of puberty. The intensity of the myotonia varies a little from time to time, but usually does not increase once adulthood is reached. All skeletal muscles may become involved to a greater or lesser extent. Initiation of movement is difficult. The speed of contraction may be prolonged, and so, to a marked degree, is the period of relaxation. With repetitive movement the myotonia diminishes, only to return when the movement is altered; reflex after-spasm is a prominent feature and adds considerably to the difficulty.[3]

The myotonia may be produced by direct percussion of the muscle and by repeated, but not single, electrical stimuli. This explains the myotonia produced by testing for the skin reflexes and the absence of myotonia following single tendon jerks, which are equivalent to single electrical stimuli.

Any skeletal muscle may be involved, producing its disability accordingly, e.g. strabismus, respiratory difficulty, etc.

In most cases the muscles appear larger than normal and this is usually confirmed by histological evidence of increased size of muscle fibre.

In some cases the patient complains of increased stiffness in cold weather. The term paramyotonia is used in those cases which show a marked response to cold, and in whom

a state of flaccid paralysis sometimes develops. Some authors consider this term an unnecessary qualification.[8]

CASE REPORTS

Case 1

Mrs. L.P., aged 35, complaining of severe stiffness of all muscles for the past 4 years. This had become so severe that she was unable to move out of the house. With repeated activity the stiffness improved but any change of direction resulted in severe stiffness and frequent falls, likened to a falling lead pipe. This distressing condition was accompanied by moods of depression and an extremely labile personality. The stiffness was first noted at the age of 11 years. At the age of 17 the condition deteriorated and was accompanied by a dull ache in the muscles which, amongst other things, was diagnosed as rheumatic fever.

The paternal history was not obtainable, but there was no myotonia on the maternal side. The patient has 2 children, both showing early signs of myotonia (described below). In recent years she has complained of a dull ache in the epigastrium causing her to vomit now and then, and of a 'vibrating sensation' throughout the body.

On examination no abnormality other than the myotonia and labile emotional state was detected. The muscles of expression and deglutition were least affected, the rest of the skeletal musculature showed severe myotonia. After grasping, the hands could not be relaxed for 30 seconds.

Blood examination. Haemoglobin 17·9 g. per 100 ml. Red cells normal in appearance.

Leucocyte count 8,200 per c.mm.; normal differential count.

Erythrocyte sedimentation rate 1 mm. in the first hour.

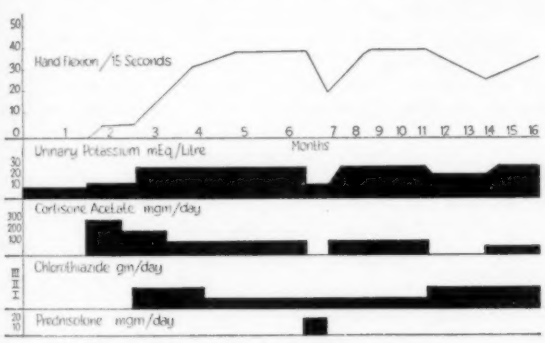

Fig. 1. Case 1. Results of treatment.

Wassermann reaction negative. Serum CO_2 content 24 mEq./litre.

Serum potassium 4 mEq./litre. Serum sodium 130 mEq./litre. Serum chloride 97 mEq./litre. Serum calcium 4·7 mEq./litre. Plasma inorganic phosphorus 2 mg./100 ml.

Histological section of muscle revealed slight hypertrophy of muscle fibre.

The 24-hour urinary potassium excretion studies are shown in Fig. 1.

Treatment and progress. There was no response to treatment with quinine, local 2% procaine, procaine amide, intramuscular injections of 2 c.c. of 50% $MgSO_4$ solution daily for 10 days, or to intravenous or subcutaneous soluble insulin, 20 units. No improvement in the myotonia followed curarization. There was no change on restriction of, or loading with, sodium. Ion-exchange resins in the sodium phase had to be abandoned after 2 days because of vomiting and diarrhoea, the patient refusing further therapy. A course of therapy designed to deplete body potassium was begun as illustrated in Fig. 1; dramatic results followed the addition of chlorothiazide, which has a marked potassium-depleting effect. The dosage has been adjusted as shown in Fig. 1 and for the past year the patient has been free of myotonic symptoms and able to run her household and work as a saleswoman. The emotional lability has improved.

Case 2

R.P., 13-year-old son of case 1. Height 4 feet. First developed myotonia at the age of 12 years. His symptoms have been mainly confined to the hands and are not troublesome enough to warrant therapy.

Case 3

I.P., 11-year-old daughter of case 1. Height 4 feet. The short stature is familial, the father's height being only 5 feet. Prominent musculature. First noticed myotonia at the age of 9 years. The myotonia has been of moderate severity and has prevented her participation in sporting activities. Her stiffness has made her the object of ridicule at school. Intellectually bright, and top in her class.

All investigations were normal. A course of chlorothiazide was started. For the past year a careful watch has been kept on the renal tract for the development of hypokalaemic tubular damage, but this has not occurred. The serum potassium is at present 3 mEq./litre and there has been a marked improvement in the myotonia.

Case 4

O.P., aged 17 years, has suffered from myotonia since the age of 5 years. Walking commenced at the age of 2. Fortunately, his myotonia was relieved to a degree by quinine and he has been able to cope with his schooling. A course of cortisone acetate, 50 mm. *t.d.s.*, was begun. Slight improvement was noted at the end of 3 weeks, enhanced by the addition of chlorothiazide. The dose of cortisone has been reduced and he is steadily improving; he is now able to play sports and has obtained a motor driver's licence.

Case 5

L.L., aged 53 years, complaining of severe muscle stiffness for the past 12 years. On examination he showed considerable sternomastoid atrophy, cataracts, and the baldness associated with myotonia dystrophica. There was no evidence of testicular atrophy. The patient is one of a large family of dystrophics, but has been included in this series not because of the relationship to myotonia congenita, which Mass and Patterson[6] have postulated, but because of the severity of the myotonia. The myotonia affects chiefly the limbs, totally incapacitating the patient. Besides the muscle dystrophy there was a free aortic incompetence of syphilitic origin, an old penile scar, and numerous gouty tophi.

Blood examination. Haemoglobin 16·0 g.%. Leucocytes, 7,100 per c.mm.; normal differential count. Erythrocyte sedimentation rate 4 mm. in the first hour. Prothrombin index 99%. Wassermann reaction negative. *Treponema pallidum* immobilization test 100% positive. Serum uric acid 6 mg./100 ml. Blood urea 23 mg./100 ml. Serum potassium 4·4 mEq./litre. Serum sodium 140 mEq./litre, plasma CO_2 content 29·2 mEq./litre. Total serum protein 6·1 g.%. Electrophoretic pattern of proteins normal.

Cerebrospinal fluid contained 4 lymphocytes per c.mm. and 50 mg. of protein per 100 ml.

The urine was microscopically and chemically normal. Urinary potassium 39 mEq./litre, 17-ketosteroids 10·6 mg. in 24 hours (estimated as dehydro-iso-androsterone), follicle-stimulating hormone less than 6 mouse units.

X-ray of the chest confirmed the left ventricular enlargement detected on examination.

Treatment and progress. A course of cortisone acetate and chlorothiazide was started, and dramatic improvement occurred within 2 weeks. The cortisone has been reduced and is now maintained on 25 mg. of cortisone acetate daily. Though the most troublesome symptom has been relieved, the prognosis in this condition is poor, the atrophy is progressive, and in time all muscles will be affected. Myotonia dystrophica contrasts sharply with myotonia congenita, in which atrophy does not occur and life is not shortened. It is doubtful whether myotonia congenita should be grouped with the muscle dystrophies.

DISCUSSION

There are many aspects of muscle physiology which are incompletely understood. The following is an over-simplified scheme, which only suffices as a framework for picturing some of the major changes which occur during muscular activity (Fig. 2): Muscle consists of 80% water, 17% protein

and the remaining 3% carbohydrates, fats, phosphates, etc.[4] There are 3 major proteins concerned. Myogen forms the bulk of the sarcoplasm; it is water soluble and contains the major enzyme systems. The second is myosin, which is insoluble in water, markedly hydrophilic, and contractile, and carries a negative charge, which is neutralized by Mg^{++} or K^{+}. The third protein is actin, which in the resting state is fibre-like and known as F-actin. On stimulation F-actin

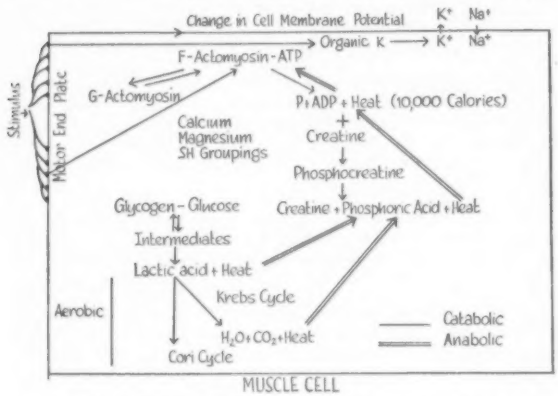

Fig. 2. Schema of muscle-cell metabolism. ATP = adenosine triphosphate. ADP = adenosine diphosphate.

polymerizes to a globular form known as G-actin. The F-actin combines with myosin, forming F-actomyosin, which requires magnesium and sulphhydril (SH) groups for strong linkage.[1] In the resting state adenosine triphosphate is absorbed onto F-actomyosin, the negative charges being neutralized by potassium. Contraction is initiated when the nerve impulse is received and transmitted at the muscle end-plates, causing an ionic disturbance with transfer of ions, particularly liberation of organically bound intracellular potassium in the ionized form, which diffuses out of the cell. At the same time some Na^{+} diffuses into the cell, associated with changing cell-membrane potentials. Fig. 2 outlines some of the chemical and heat changes that occur with muscle contraction and relaxation, the latter being the anabolic state of the cycle.

From both clinical and experimental evidence it would appear that a role of potassium, obscure as it may be, is by virtue of its concentration within the cell (intracellular/extracellular ratio) to produce changes in the contractile ability of the muscle fibre. Extreme depletion, on the one hand, and potassium intoxication, on the other, both result in flaccid paralysis.

Important changes occur with other ions; one may cite the role of sodium and potassium in familial periodic paralysis;[2] magnesium depletion;[5] SH-group depletion;[7] and KCl given intra-arterially causing tonic contraction of muscle.[11] On several occasions it has been possible to demonstrate the mild myotonia in cases of myotonia dystrophica only after a loading dose of oral potassium or intravenous potassium infusion.

It was decided to observe the effects of altering the sodium, potassium and magnesium concentrations in case 1. There was no response to loading with magnesium or the addition of tri-iodiothyronine. The myotonia persisted with curarization, eliminating the possibility of a cholinesterase deficiency. There was no improvement with NaCl loading or depletion. Ion-exchange resin in the Na phase produced nausea and diarrhoea, and the patient refused this therapy. There was no response to insulin, the dosage being limited by the hypoglycaemic effect. Intravenous 40% glucose produced no change. Cortisone acetate was administered as shown in Fig. 1, the response being graded by counting the number of hand flexions and extensions per 15 seconds. After 3 weeks there was some improvement, which was enhanced dramatically with the addition of chlorothiazide. The urinary potassium excretion was doubled. Three weeks later tri-iodiothyronine was added to increase the metabolism and possibly increase the potassium turnover; as this calorific agent was considered unnecessary and of no value, it was stopped after 16 weeks.

The response to treatment was correlated with potassium depletion but, in order to eliminate the possibility of a specific corticosteroid effect on muscle metabolism, the cortisone acetate was replaced with an equivalent dose of prednisolone. The myotonia increased, improving once again on reverting to cortisone acetate. The patient was not aware of the change in therapy at the time. For 2 months adequate control was maintained with increased chlorothiazide, but eventually the additional steroidal depletion effect was needed.

The improvement in case 3 on chlorothiazide, and the excellent response to chlorothiazide-cortisone potassium-depletion therapy in cases 4 and 5, with subsequent reduction of steroid to a minimum maintenance dose, confirm the therapeutic value of this approach.

The cortisone was considered necessary in commencing therapy, in order to enhance the potassium loss and deplete the body stores. Though low serum-potassium levels have been maintained for 18 months in one case, there has been no renal damage, no salt retention, no hypertension, and remarkably little mooning of the face. This has been attributed to the concomitant administration of chlorothiazide.

It must be stressed that potassium depletion is not without danger and must only be undertaken under strict medical supervision. Cortisone must be withheld as long as possible in adolescents because, especially during this period of rapid growth, these glucocorticosteroids may impair protein metabolism. In adults the administration of anabolic steroids largely overcomes this effect.

SUMMARY

Four cases of myotonia congenita, and one of myotonia dystrophica with severe myotonia, are presented. In the 4 cases treated, the response to therapy over the past 18 months has been most gratifying.

I wish to thank Dr. A. L. Agranat, senior physician, Johannesburg General Hospital, for his encouragement and cooperation, and Dr. M. B. Feldman and Dr. A. J. Tinker for referring their cases.

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ISOLATION OF WEST NILE VIRUS FROM A NATURALLY INFECTED HUMAN BEING AND FROM A BIRD, *SYLVIETTA RUFESCENS* (VIEILLOT)*

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In a previous paper in this *Journal* Weinbren[1] presented a review of the literature concerning the clinical aspects of infection with West Nile virus. The same publication reported the results of a serological survey for the presence of West Nile neutralizing antibodies in sera collected from various vertebrate hosts, including man, which indicated that the virus was active in the Union of South Africa. The present paper describes the isolation of West Nile virus from the serum of a naturally infected human being and from the tissues of a wild-caught bird, *Sylvietta rufescens* (Vieillot) commonly called a crombec warbler. Both specimens were collected in Tongaland, Union of South Africa, in April-May 1958, as a part of the regular field activities of this Unit A brief account of the field programme since its initiation in 1954 is given in the introduction of a previous paper (Kokernot *et al.*[2]).

MATERIALS AND METHODS

The methods used in the documentation and processing of huma sera for attempted virus isolation have been reported elsewhere.[2] Briefly it may be stated that the acute and convalescent sera from the case cited here were proved to have been derived from the same donor by a comparison of two sets of fingerprints‡ taken at the different times when the blood specimens were obtained.

Experience has shown that a significant number of individuals engaged in various aspects of the field programme have acquired clinical illness during the work periods. The aetiology of such cases has been confirmed by virus isolation and demonstrated by serological studies to have been due to infection with some one of the arthropod-borne viruses.[2-4] Careful surveillance of field personnel is now maintained and includes initial fingerprinting for identification, obtaining of pre- and post-employment blood specimens (the latter to detect possible inapparent infections), and taking of temperatures orally, morning and afternoon.

The crombec warbler§ was captured in a Japanese mist net and taken to the field laboratory, where it was anaesthetized. The spleen and a sample of liver were removed aseptically and stored together in a sterile glass container on CO_2 ice. At the Johannesburg laboratory the tissues were suspended in a volume of bovine plasma-albumin estimated to give a 10% suspension and then centrifuged. After treatment with penicillin and streptomycin the supernate was inoculated intracerebrally into newborn and adult mice.

The method used in identifying the virus strains isolated from the human serum and the tissues of the bird was similar to that described by Smithburn *et al.*[3] All neutralization tests, however, were done with sera previously heat-inactivated in a 60°C water bath for 30 minutes. An equal volume of fresh normal rhesus monkey serum (obtained 1-2 hours previously) was added to the inactivated sera just before the setting up of the test proper. This step was taken to assure the presence of the heat-labile accessory substance present in normal serum[5,6] which augments the activity of neutralizing antibodies to West Nile virus. Casals *et al.*[7] have described the methods utilized in doing complement-fixation (CF) tests. Haemagglutination-inhibition (HI) tests were done according to methods described by Clarke and Casals.[8]

The strain of West Nile virus used in these studies was the original isolate described by Smithburn *et al.*[9] in its 33rd mouse-brain passage.

RESULTS

Isolation and identification of virus strain from the human being

An African male (J.M.), aged 26, was employed during the period 23 April – 1 May 1958, by the field team at Ndumu to assist in the capture of wild birds with the aid of Japanese mist nets. Each morning he arrived at the nets shortly after sunrise, and remained there until sunset. His task was to remove from the nets birds that were caught, and in the intervening periods he stayed near by in the grass, obscured from birds under clumps of bush. On 28 April, after 4 days of such activity, he reported at about 18.00 hours to the doctor present at the station with vague complaints of feeling ill and having a headache. Although in no obvious distress, he appeared ill and had an oral temperature of 101·2°F. A venipuncture was made and about 15·0 ml. of blood taken. The specimen was designated H 442. The serum was separated the following morning and stored in a lusteroid tube on CO_2 ice. The day after onset the individual was afebrile and able to resume his normal duties.

On 28 May, after it had been stored for 3 days on CO_2 ice and 27 days in a frozen state in a mechanical deep-freeze (−20°C), the specimen H 442 was inoculated intracerebrally into 2 litters of one-day-old mice. After a 4-day incubation period, 3 infants from one litter were missing (presumably eaten by their mother) and all others of both litters were sick. Brains of the sick mice were harvested for passage, pathological examination and storage. Passage was successful and a serially transmissible agent was established. The 2nd-passage infected mouse-brain material was pathogenic for adult mice inoculated intracerebrally. The infective agent was easily filterable through a Seitz pad.

In the attempt to re-isolate the agent from H 442 serum, made on 2 June 1958, 3 different dilutions were made and each was inoculated intracerebrally into 2 litters of newborn

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‡ We acknowledge with thanks the examination of and opinion on these prints by a member of the South African Police force, Lt. G. Retief, Officer-in-Charge, Local Finger Print Office, Johannesburg.

§ The authors acknowledge with thanks the identification of this bird by Mr. R. Liversidge, Ornithologist on the staff of the Port Elizabeth Museum.

mice. Eleven of the 12 infants inoculated with a $10^{-0.3}$ serum dilution were either missing, dead or sick between the 5th and 7th days following inoculation. In 2 litters inoculated with a $10^{-1.3}$ serum dilution, 2 mice were missing on days 4 and 7, while the rest remained well for 21 days. In the litters inoculated with a $10^{-2.3}$ dilution, only one mouse died, on day 9.

An intracerebral adult-mouse neutralization test with H 442 virus was done against a serum obtained from J.M. 4 days before onset of illness as well as his acute- and convalescent-phase sera. The test showed a significant rise in neutralizing antibodies during convalescence of the donor and thus confirmed the fact that the virus had originated with him. The results of this test are shown in Table I.

TABLE I. RESULTS OF AN INTRACEREBRAL ADULT-MOUSE NEUTRALIZATION TEST WITH H 442 VIRUS AGAINST 3 SERA OBTAINED FROM THE PERSON FROM WHOM THE VIRUS WAS ISOLATED

Serum with date of bleeding	*Dilution of virus*	*Fate of mice*		*Calculated titre of virus 1 to:*
		Died	*Survived*	
	10^{-6}	6	0	
Routine pre-employment	10^{-7}	5	0	
	10^{-8}	3	3	130,000,000
24.4.58	10^{-9}	1	5	
	10^{-10}	0	6	
	10^{-6}	6	0	
Acute-phase	10^{-7}	6	0	
28.4.58	10^{-8}	4	2	178,000,000
	10^{-9}	0	6	
	10^{-10}	0	6	
	10^{-4}	5	1	
Convalescent-phase	10^{-5}	1	5	31,000
4.6.58	10^{-6}	0	6	

A rise in HI antibodies to the homologous virus as well as to West Nile virus and AN 2842 (designation given virus strain isolated from the crombec) was also demonstrated in a test with the donor's one acute- and two convalescent-phase sera. In this test, one of the later serum specimens was taken over 7 months after onset of illness and a significant drop in HI antibodies was noted. These results are shown in Table II.

TABLE II. RESULTS OF HI TEST WITH H 442 ANTIGEN SHOWING ORIGIN FROM A HUMAN BEING AND RELATIONSHIP TO WEST NILE AND AN 2842 VIRUSES

Serum†	*Antigen**		
	West Nile	*H 442*	*AN 2842*
Acute			
28.4.58	10	10	10
Convalescent			
4.6.58	640	640	640
9.12.58	80	40	80

* Eight units antigen used.
† Results expressed as reciprocal of serum dilution giving complete HI.

An intracerebral adult-mouse cross-neutralization test with West Nile and H 442 viruses against their respective pre- and post-inoculation guinea-pig sera indicated a significant reciprocal cross-relationship between the two viral strains. These results, incorporated in Table III, thus identify H 442 virus as a strain identical with or closely related to West Nile virus.

TABLE III. RESULTS OF CROSS-NEUTRALIZATION TESTS WITH WEST NILE, H 442 AND AN 2842 VIRUS STRAINS AGAINST THEIR RESPECTIVE PRE- AND POST-INOCULATION GUINEA-PIG SERA

Serum	*Virus strain, logs neutralized*		
	West Nile	*H 442*	*AN 2842*
West Nile	3·3	5·0	2·6
H 442	4·0	4·7	3·0
AN 2842	4·2	4·0	2·5

Isolation and identification of virus strain from tissues of a crombec warbler—Sylvietta rufescens (*Vieillot*)

This virus strain was isolated from a suspension of pooled spleen and liver tissue taken from a crombec caught in one of the Japanese mist nets on 7 May 1958. It is significant that one week before the capture of the crombec the donor of H 442 virus had been assigned to the net detail for an 8-day period and that in the interval the position of the nets remained unchanged.

The pooled tissues from the crombec were kept on CO_2 ice until processed in Johannesburg on 12 May. In the litter of 6 newborn mice inoculated intracerebrally with 0·03 ml. of the suspension, one was moribund on the 7th post-inoculation day and the remaining 5 remained well for 21 days. The group of 6 adult mice similarly inoculated remained well for the same period. A brain suspension prepared from the moribund infant mouse and inoculated intracerebrally into newborn and adult mice caused illness in both after a 4-day incubation period. The infective agent in 2nd-passage brain material was readily filterable through a Seitz pad. The agent was designated AN 2842 virus strain to correspond with the accession number given to the tissues obtained from the crombec.

A crude HA antigen was prepared from AN 2842 virus-infected infant-mouse brains. The results of a screening test with this antigen indicated that AN 2842 was a group-B agent related more closely to West Nile virus than to any of the other agents of the group represented in the test.

In a screening CF test with AN 2842 antigen and 5 group-B-virus mouse hyperimmune sera, complement was fixed only in the presence of West Nile immune serum.

The results of cross-neutralization test with the human isolate (H 442), the bird isolate (AN 2842), and the prototype strain of West Nile virus, against their respective pre- and post-inoculation guinea-pig sera are presented in Table III. The results of these tests indicate the relationship of the virus strain isolated from the human being to the strain isolated from the crombec. Furthermore, they show that both strains are identical with or closely related to West Nile Virus.

DISCUSSION

The isolation of West Nile virus from a naturally infected human being in the Union of South Africa should serve to alert the medical profession to a consideration of this agent in the differential diagnosis of cases of pyrexia. The fact that it has been isolated from a bird as well tends to confirm the results of the South African serological survey presented by Weinbren,[1] which indicated that neutralizing antibodies due to West Nile virus occur in these two vertebrate hosts.

The aetiology of West Nile virus infection in man can be determined with certainty only if the virus is isolated or if the convalescent serum shows a significant rise in antibody titre over the acute-phase serum. In attempts at virus

isolation, the blood specimen should be obtained in the early stage of illness and during the period of pyrexia, since the period of viraemia in arthropod-borne virus diseases is short. If the diagnosis is to be made by serological study, it is necessary to have paired sera, the first taken as early as possible in the course of the illness and the second during the 2nd or 3rd week of convalescence. Both specimens should be refrigerated without actual freezing and handled in such manner as to prevent bacterial contamination and minimize haemolysis.

SUMMARY

1. The isolation of a strain of West Nile virus from the blood of a naturally infected human being is described.

2. Following infection there was a significant increase in titre of both neutralizing and haemagglutination-inhibiting antibodies in tests controlled by the inactivated acute serum from which the virus was isolated.

3. The isolation of a strain of West Nile virus from pooled tissues (liver and spleen) of a wild-caught crombec warbler is also described.

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A HAZARD ASSOCIATED WITH THE USE OF A FACE MASK: CASE REPORT

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Hazards directly associated with the clinical application of face masks for purposes of anaesthesia, of resuscitation, or both, are not generally known. A sequela is here reported, with a brief discussion of the care needed in the use of rubber face masks, and the results of an investigation prompted by our suspicion (which proved to be unfounded) that the new chemically-active anaesthetic halothane (fluothane) might be incriminated.

At the Karl Bremer Hospital it is standard practice for the anaesthetic face masks to be washed with hexachlorophene soap and water *only* after each use and powdered with talc when dry.

CASE REPORT

J.M.S., a European female patient aged 35 years, underwent an appendectomy, the anaesthetic time being 1¼ hours. Premedication consisted of 50 mg. of pethidine, 25 mg. of phenergan, and 0·65 mg. of atropine. For induction of anaesthesia the patient received 400 mg. of thiopentone, and anaesthesia was maintained with halothane vaporized from a Rowbotham bottle inserted into the inspiratory limb of a semi-closed Boyle mark-11 circle absorption system. A dose of 60 mg. of gallamine ('flaxedil') was given fractionally to aid relaxation. Oxygen only, at a flow rate of 1 litre per minute, was led into the absorption system.

A size 3 M. & I.E. 'Everseal' rubber mask (Figs. 1 and 2) was fixed tightly in position by a harness, over a rubber Water's oropharyngeal airway, in such a way that the chin was held up by the mask, so that manual support of the jaw was unnecessary.

On the following morning a chemical burn exhibiting some dark pigmentation (Fig. 3) withstood the attempts of one of the nurses to remove it; the lesion resembled an impression of the face mask so closely that the nurse tried to rub it off believing it to be a stain.

DISCUSSION

While it is obvious that the eyes need protection from a mask, neither of us had seen or heard of such a burn on the face. Trivial lacerations of the lips are known to result from improperly applied masks, but there was nothing to suggest significant pressure or allergy in the present case. Dr. J. Marshall, consultant dermatologist at the hospital, confirmed the diagnosis of primary chemical burn followed by increased pigmentation which in time would disappear entirely. The lesion faded and was, in fact, hardly visible 14 days later.

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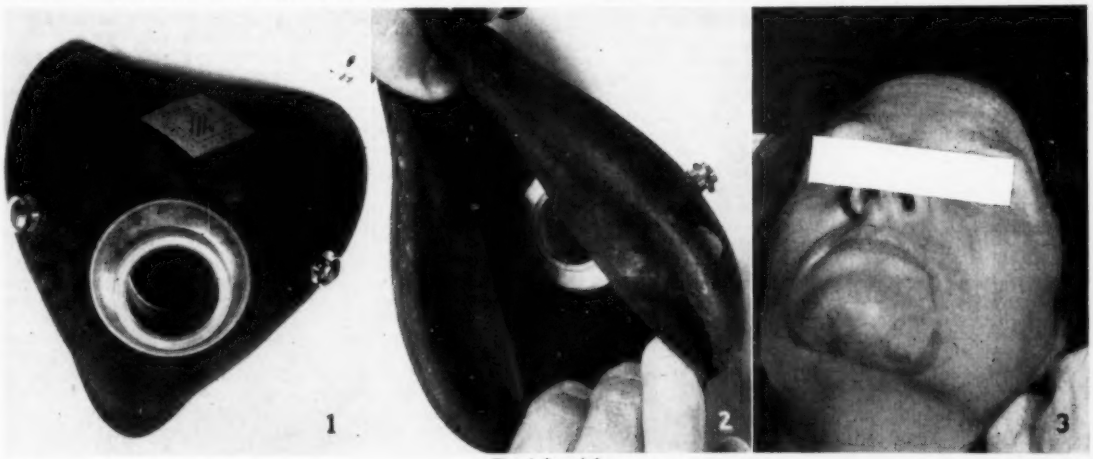

Figs 1, 2 and 3.

Our investigation was therefore directed to the anaesthetic masks as such. Something must have rendered the mask used in this case harmful to the skin. On smelling the masks one with a slight but distinct phenolic odour was found. On questioning, the anaesthetic nurse stated that, after cleaning a theatre in which a patient suffering from tetanus had been operated on, the anaesthetic equipment had been left to soak in a weak solution of 'instrument dettol' and water. After this the mask had been washed with soap and water, and because it still had a faint smell it was again washed with soap and water, and only then made available for routine use. To exclude a possible sensitivity in the patient a patch test was done on her with antistatic rubber soaked in (1) halothane, (2) a 5% solution of 'instrument dettol', and (3) halothane and a 5% solution of 'instrument dettol'; and with white lint soaked in (1) 5% 'instrument dettol' and (2) halothane. The patches were covered with waterproof adhesive plaster and left for 48 hours. Upon removal, and after washing the skin to remove traces of the black antistatic rubber, no skin lesion could be seen.

CONCLUSION

A patient suffered a primary chemical burn of the face after a surgical procedure, as a result of 'instrument dettol' being in contact with the face mask used (a practice warned against by the manufacturers). Although it was a weak solution repeated subsequent washing with soap and water did not remove it. A first-degree burn was sustained by the first patient on whom it was subsequently used.

We wish to thank Dr. R. S. Cormack, Medical Superintendent (acting), Karl Bremer Hospital, for permission to publish this case report.

THE USE OF TOFRANIL (IMIPRAMINE) FOR DEPRESSIVE STATES IN PRIVATE PSYCHIATRIC OUT-PATIENT PRACTICE: A PRELIMINARY EVALUATION

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In recent years progress in the management and treatment of mental illness has been accelerated by several new pharmacological substances; notably the phrenotropic substances such as chlorpromazine, phenothiazine derivatives, and the rauwolfia alkaloids. These drugs have been used to treat, more successfully than before, patients suffering from mania, agitation, pathological excitement, states of elation, and morbid anxiety, especially the emotionally and mentally disturbed patients who have been unresponsive to psychotherapy and the prevailing methods of sedation and physical treatments, such as insulin coma therapy and electric convulsive therapy (ECT).

Until recently, the drugs used for the treatment of depressive states have been excitatory substances (stimulants) such as the amphetamines, pipadrol (meratran), and methyl phenyl-(a-piperidyl) acetate hydrochloride (ritalin), all of which have a similar psychopharmacological action. Their effect has been so limited and temporary as to be considered only of adjuvant assistance in the management and treatment of depressive states.

For the past 20 years, ECT has proved to be the most rapid and effective form of treatment for depressive states, notably those of endogenous nature.

A turning point seems to have been reached with the advent of the potent new antidepressant drugs which are at present on clinical trial; they open up a new field in the therapy and approach to the management of patients with depressive states.

Some striking results in alleviating depressive phenomena have been achieved in the past few years following the development of Tofranil by J. R. Geigy S.A., Basle (synthesized by Haëfliger). Tofranil is an iminodibenzyl derivative with the same side-chain as chlorpromazine but with a different ring system. Chemically, the drug is N-(3 dimethylaminopropyl) iminodibenzyl hydrochloride. Biochemical studies have shown that Tofranil is not a stimulant of the central nervous system, neither has it a pronounced hypnotic-sedative action. Animal experiments show demonstrable anti-serotonin and anti-cholinergic properties and some adrenergic action. It does not inhibit amino-oxidase. The exact mode of action is as yet not known. Tofranil has been reliably reported clinically to effect a specific anti-depressive action on pathological depressive states, producing gradual lessening and frequently a disappearance of the symptoms and signs of depressive states. Improvement, when it occurs, is manifested usually within 2–6 weeks after the commencement of therapy.

From clinical observations it appears that Tofranil has a mild sedative action. It does not interfere with sleep. It facilitates verbal flow and increases mental alertness and useful activity and a sense of well-being, especially in endogenous depressive states. Its effect on the cardiovascular system, by causing orthostatic hypotension, may limit its use in certain cases. Serious liver damage, blood dyscrasias or toxic effects on the kidneys or the central nervous system have not yet been reported after a 3-year trial.

SELECTION AND SUBJECTS

The present limited study and preliminary evaluation of the results of treatment is based on the observation of 30 patients from private practice to whom Tofranil had been given over a 6-month trial period. The patients were told that the drug was experimental and informed of the possible side-effects. These patients received no formal psychotherapy and they were treated on an out-patient basis. Their life situation remained virtually unchanged during the treatment period, thus excluding the possible favourable psychotherapeutic influences of the hospital millieu; and the therapeutic situation approximates to one which is likely to exist when selected cases of endogenous depression, preferably confirmed by a psychiatrist as suitable for treatment with the drug, receive this form of therapy from their general practitioner when the drug becomes available in the near future.

DIAGNOSTIC CATEGORIES

The clinical diagnostic categories comprised 3 main groups:

Group 1: *Primary depressive states* (*predominantly endogenous*) *of a chronic recurring nature.* These patients suffered from recurrent, typical, primary endogenous depressive states as described below; I have known them well over a period of years, and they constitute a specially selected group. All had received previous courses of ECT and other available forms of therapy with unsustained benefit, necessitating monthly maintenance ECT. Complete relief of their depressive states had not lasted longer than 3–4 weeks at a time without monthly ECT since the onset of the last severe attack (12–18 months before the institution of maintenance ECT).

Group 2: *Primary depressive states* (*predominantly endogenous*) *of recent onset* (3–6 months duration), typical and atypical (disguised depressive equivalents). This group of 12 cases was comprised of moderately severe and severe cases (deeply depressed with suicidal preoccupation). Of these cases 5 were subject to typical endogenous depression (described below)—2 had suffered from similar previous depressive illness, 3 to atypical depression (disguised endogenous depressive equivalents), 2 to endogenous depressive states (manic-depressive psychosis), and 2 to endogenous depression (involutional). All these would have received ECT if Tofranil had not been available, and 10 cases referred for psychiatric treatment were seen for the first time suffering from a first severe attack of depression.

Group 3: *Secondary depressive states* (*predominantly neurotic*). These cases were a *mixed* group in which the predominant complaint of depression, in varying degrees of severity, occurred in

people who also had (*a*) long-standing character disorders (inadequate or aggressive types); (*b*) eccentric or schizoid personalities; (*c*) neurotic personalities with a history of long-standing obsessional, phobic or hysterical traits; (*d*) hypersensitive, asthenic people subject to states of exhaustion with marked depressive features; and (*e*) states of depression and anxiety which, on analysis, were found to be due to deep-seated neurosis originating in early childhood (elicited by LSD).

Patients with depressive states usually designated as reactive or associated with physical illness or schizophrenia, were not included in this series. The term reactive depression is generally accepted to include those cases which are predominantly psychological in causation and found to be precipitated by environmental stress such as the loss of a child, some financial disaster, business difficulties, domestic unhappiness, or social embarrassment. They invariably respond to psychotherapy, but, if they persist for longer than 3 months, or if they present any of the ominous attributes listed below, they should be treated in the same way as cases of endogenous depression after assessment by a psychiatrist.

Typical primary endogenous depressive states, including acute, recent, recurring, and chronic cases. Of the classical type (described below), 23 cases fulfilled the usual accepted diagnostic criteria and were assessed on a clinical basis of behavioural observation and the eliciting of subjective symptoms; the diagnostic symptoms and positive findings being:

1. Persistent or fluctuating depressed mood, i.e. a person who is unhappy, sad and ill to the point of incapacity owing to a morbid mental state (with or without suicidal preoccupation).
2. Slumping of normal interest in work and in the everyday pleasures of living.
3. Abnormal tiredness, exhaustion or fatiguability, lack of energy, 'everyday tasks a burden', 'unable to cope'.
4. Difficulty in thinking or slowed-down thinking, inability to concentrate.
5. Insomnia, loss of appetite, loss of weight, loss of libido.
6. Objective evidence of lack of spontaneity and animation, depressed manner, despondent attitude, anxious or sad expression, and evidence of overt anxiety and agitation.
7. The absence of physical findings and the absence of adequate psychogenic cause to explain the onset or prolonged perpetuation of the condition.
8. The condition having come on insidiously or 'out of the blue' and having been present for over 3 months without manifestations of more than slight improvement for more than short intervals.
9. Negative response to psychotherapy, sedatives and stimulant drug therapy.

The 3 cases designated as *atypical disguised depressive equivalents* presented with predominantly physical complaints which on clinical examination and investigation were proved to have no organic basis. Their hypochondriacal preoccupation with somatic symptoms had obscured the classical underlying symptoms typical of primary endogenous depression, but these were elicited during a searching psychiatric examination.

In the 2 cases of *endogenous depression of manic-depressive type*, psychiatric examination elicited a history of previous periods of mild depression alternating with periods of mild elation (indicative of a manic-depressive temperament). The depressive symptoms were similar to those listed above.

The 2 cases of *endogenous depression occurring in the involutional period* presented with the classical features and symptoms of typical primary endogenous depression described above, but the usual features of this condition were also manifested, i.e. agitation, restlessness, self-accusations of worthlessness and guilt and self-blame without cause. The condition developed without an adequate psychogenic precipitating cause and a history of previous attacks of depression was not obtained.

ASSESSMENT OF IMPROVEMENT

The patients were assessed clinically according to the following criteria:

Marked improvement—complete remission of symptoms, i.e. return to full activity with a positive state of well-being.

Moderate improvement—a significant improvement resulting in freedom from the depressive mood and disabling symptoms of the depressive state, but symptoms or complaints of mild nature still present; ECT not indicated.

Slight improvement—slight amelioration of condition, but persistence of disabling symptoms to the degree that ECT was required to effect remission.

No improvement—those cases who could not tolerate the drug owing to unpleasant side-effects; those who stopped the drug prematurely (obsessional, phobic, neurotic personalities); those cases in whom the suicidal preoccupation became ominous or who could not be allowed to risk further deterioration owing to the time lag of 3–6 weeks that often exists between commencement of treatment and the effective response. The rapidity and effectiveness of ECT constituted a life-saving measure in these cases.

In the 30 cases treated, drug therapy that had been initiated before the commencement of treatment with Tofranil was not stopped. The administration of dexamphetamine and amyllobarb and chlorpromazine that had been prescribed for sedation and for relief of agitation and insomnia, was continued in the same dosage as before in association with the Tofranil regime.

RESULTS OF TREATMENT OF DEPRESSION WITH TOFRANIL

The results of treatment in 30 cases of depression treated on an out-patient basis are summarized in Tables I–III. In general, the drug produced improvement in approximately 70% of cases of depressive states of predominantly endogenous type, and less

TABLE I. GROUP I: PRIMARY DEPRESSIVE STATES PREDOMINANTLY ENDOGENOUS (CHRONIC, RECURRING)

No. of patients	*Sustained improvement on maintenance therapy*			*Percentage improvement*
	Marked	*Moderate*	*Slight or nil (ECT required)*	
11	4	4	3	72·9

TABLE II. GROUP II: PRIMARY DEPRESSIVE STATES PREDOMINANTLY ENDOGENOUS—TYPICAL AND ATYPICAL (ONSET RECENT)

No. of patients	*Sustained improvement on maintenance therapy*			*Percentage improvement*
	Marked	*Moderate*	*Slight or nil (ECT required)*	
12	3	5	4	66·6

TABLE III. GROUP III: SECONDARY DEPRESSIVE STATES PREDOMINANTLY NEUROTIC

No. of patients	*Sustained improvement on maintenance therapy*			*Percentage improvement*
	Marked	*Moderate*	*Slight or nil*	
7	1	1	5	28·5

than a 30% improvement in depressive states of predominantly neurotic type. No serious sequelae following the use of this drug occurred in this series of cases.

DOSAGE AND METHOD OF ADMINISTRATION

Tofranil is supplied as small coral-coated tablets for oral use (not to be chewed) containing 25 mg. of Tofranil. Ampoules containing 2 c.c. (25 mg.) of Tofranil are best given intramuscularly in the buttocks with hyaluronidase (hyalase) for rapidity of effect and to prevent pain and discomfort.

The average effective oral dose of the drug was found to be 150 mg. daily, given in divided doses. The routine oral administration consisted of initiating medication with a dose of 75 mg. (1 *t.d.s.*, *p.c.*) as advised in the brochure of J. R. Geigy S.A. prepared for Tofranil,[1] and then increasing the dose to 150 mg. after a few days to a week, according to the patient's condition and the presence or absence of side-effects and response.

Disturbing side-effects were observed in only 3 patients on a daily dose below 200 mg. (Photosensitivity in 1 case and unpleasant listlessness in 2 cases.) Within 10–14 days the dose was increased to 200 mg. or 300 mg. daily and maintained at that

level until a favourable response occurred, after which it was reduced to 150 mg. daily for 2 weeks, then gradually over the next 2 weeks to the smallest optimal effective daily dose. This was established on an individual basis. Patients were seen weekly for clinical assessment and for advice regarding dosage and blood pressure estimations.

Improvement was assessed by the patients' reports of a sense of lessening depression and return of a feeling of well-being and normal alertness and energy. Usually this occurred between the second and third weeks of therapy, but in some cases was delayed for 6 weeks.

This therapeutic time lag is important in cases of depression of ominous type.[2] The cases whose depth of depression and suicidal ruminations constituted danger signals, indicated that a suicidal attempt could be expected and that ECT could not be delayed. Tofranil was continued during out-patient ECT, and it was noted in 4 cases, who had required 10–15 administrations of ECT to produce improvement in previous attacks, that only a third of this number of treatments were necessary to produce remission. This is probably attributable to the fact that Tofranil was being administered at the same time.

Duration of Treatment

The results of previous clinical reports and the present clinical trial indicate the importance of continuing the optimal effective maintenance dosage for at least 2 months after maximum improvement had occurred and in many cases for longer periods, because relapse is common after withdrawal of the drug. When withdrawal is attempted, it should be done gradually over a 2-week period. If relapse occurs, resumption of Tofranil medication is effective within a week. This indicates that long-term therapy will be required.

Additive sedation with chlorpromazine and sodium amytal was given to those patients with depressive states where anxiety, agitation and insomnia were present, and this was found to be essential in those cases who tended to become elated (the manic-depressive group with a previous history of mood swings). Stimulant therapy, dexamphetamine or methyl phenyl-(a-piperidyl) acetate hydrochloride (ritalin) was often required as adjuvant therapy during the first few weeks of treatment and appeared to alleviate and in some cases, prevent possible side-effects (giddiness, listlessness and extreme sweating).

Constipation was troublesome but responded to mild laxatives; it was not complained of by those patients whose daily maintenance dose was 100 mg. or less.

Side-effects

A variety of side-effects of a mild type, which did not necessitate cessation of medication, occurred in over half of the cases treated. Decrease in dosage to below 150 mg. a day reduced the intensity of the symptoms in all cases except in patients over 60 and under 20 years of age, who did well on a lower dosage of 75 mg. a day. In those patients whose dose was 100 mg. a day or less, side-effects were conspicuously absent.

Syncope, due to orthostatic hypotension, in 1 case, and severe unpleasant lassitude in 2 others necessitated discontinuation of the drug.

Minor side-effects noted, in order of frequency, were: Dryness of mouth, 17 cases, 56%; constipation, 14 cases, 46%; tremor, 6 cases, 20%; dizziness, 3 cases, 10%; excessive perspiration, 3 cases, 10%; unpleasant lassitude, 2 cases, 7%; palpitations, 2 cases, 7%; syncope, 1 case, 3%; photosensitivity (dermatitis face and neck), 1 case, 3%; and a shift to the hypo-manic state (controlled by chlorpromazine), 1 case, 3%.

Jaundice, epilepsy, extra-pyramidal signs, nausea and vomiting, increased agitation, headache, visual symptoms, urinary difficulties, and toxic confusional states are rare side-effects described by other workers; they have not occurred in this series up to the date of publication of this report.

DISCUSSION AND CONCLUSIONS

The present study was based on the results of a number of workers who have been using Tofranil during the past 3 years.

Kuhn[3] in Switzerland was the first to describe the promising results he obtained following treatment of more than 300 patients with Tofranil. Over 75% improvement occurred mainly in the group of endogenous depressions. Side-effects in his series were slight in cases on daily dosages of up to 300 mg.

Azima and Vispo[4] reported a 83% significant improvement in 63 patients with depressive states treated with Tofranil.

Lehman, Cahn and de Verteuil[5] reported on a group of 84 hospital patients with moderate to severe degrees of depression treated with Tofranil, and state that 60% were recovered or much improved after 2 months of therapy.

Azima,[6] in a later paper, reports that he obtained marked to moderate improvement in 82% of 100 patients with depressive states treated with Tofranil, and found that psychotic depression showed twice as much improvement as neurotic depression. He concludes that his general impression was that Tofranil was a potent antidepressant substance which had resulted in a drastic decrease in the number of sessions of ECT previously found necessary to produce a remission.

Sloane, Habib and Batt[7] administered Tofranil to 30 patients with depressive psychoses (manic-depressive type), suffering from psychiatric illness of the kind and degree usually referred to and admitted for treatment to wards of a general hospital. The criterion of selection was severity of symptoms justifying the use of ECT. They report that 80% recovered and that the average period of hospitalization was 5 weeks; they also stress, as do other workers, that administration of the drug has to be continued over a considerable period of time and that relapse may follow withdrawal.

Straker[8] reports his impressions of Tofranil given to 26 patients from his private practice. He considers Tofranil an effective antidepressant drug, and he obtained an improvement rate of 80% without any significant toxic side-effects.

The favourable results of treatment with Tofranil in patients with depressive states, mainly of endogenous type, is therefore generally confirmed by numerous workers.

This form of therapy may involve long-term therapy in order to prevent relapse. The slowness of onset of therapeutic effect, and the difficulty in assessing the suicidal risk in individual cases should be borne in mind.

Most workers who have reported on this drug stress that ECT is essential in cases in which the suicidal risk is pronounced, and that ECT should be used as part of larger psychotherapeutic programme. The lack of adequate facilities for the treatment of psychiatric patients in so many parts of the world and the prejudice against ECT tend to nullify the risks of treating depressives, who otherwise would get no treatment at all with the drug.

The number of suicides recorded in England and Wales in 1954 (5,043) represent an average of 14 suicides a day.[9] A large number of these deaths were shown, after investigation, to have been due to endogenous depressive states. Similar figures are reported in other countries.

The necessity and value of an antidepressant substance such as Tofranil is therefore indisputable. Its availability in South Africa can be expected to ease the burden of overcrowded mental hospitals as well as to lighten the task of the practitioner in treating patients with depressive states on an out-patient basis.

SUMMARY

1. Tofranil was administered to 30 cases selected from private practice and treated on an out-patient basis. The drug effected improvement in approximately 70% of cases of depressive states of predominantly endogenous type, and less than 30% improvement in depressive states of predominantly neurotic type. These findings correspond well to the original reports of Kuhn who obtained approximately 75% improvement in 300 cases treated with Tofranil.

2. Minor side-effects were common. Disturbing side-effects necessitating withdrawal of the drug were relatively rare. No serious sequelae following the use of the drug have occurred in this series.

3. The therapeutic time lag of 2–4 weeks constitutes a risk to life in cases of ominously depressed patients with suicidal ideas. ECT should be regarded as an essential form of therapy in these cases if institutional care is not available.

4. The diagnosis of endogenous depression, typical and atypical, and the assessment of the depth of despair and the strength of the suicidal impulse is often a difficult problem even for the psychiatrist. The general practitioner who considers Tofranil indicated, is advised to enlist a psychiatric appraisal and assessment if there are any ominous symptoms present.

5. Relapse when the drug is discontinued is common. A careful follow-up and immediate resumption of therapy and its prolonged use may be necessary.

6. It is concluded that Tofranil is a relatively safe (non-toxic) drug which is of particular value in the treatment of the predominantly endogenous type of depressive state.

My appreciation is expressed to Messrs. J. R. Geigy S.A. for their cooperation and the generous supply of Tofranil they made available to me to make this preliminary study possible.

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THE USE OF TOFRANIL IN MENTAL HOSPITAL PRACTICE

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Over the last few years there has been an appreciable increase in the admission rate to hospitals of patients suffering from depressive conditions. Until now only electric convulsive therapy (ECT), together with psychotherapy, have provided any degree of success in the treatment of these depressive states. As a result of the overcrowding of mental hospitals, the shortage of medical staff, and the limited facilities for treating these conditions in general hospitals and private practice, these methods of treatment have not been exploited fully. Moreover, ECT is sometimes contra-indicated by some concomitant organic disease.

Up to this stage the results obtained with psychopharmacological drugs in the treatment of the depressive conditions have been most disappointing; their action being slight or indeed completely absent. However, these drugs often have a beneficial effect on anxiety and restlessness, producing tranquillity and relaxation (chlorpromazine, reserpine, meprobamate); or they have an excitatory effect promoting increased activity (amphetamines).

Tofranil

Recently, several reports have been published on the use of a new antidepressive drug, imipramine (G22355 or Tofranil).† Tofranil (N-(3-dimethylaminopropyl) iminodibenzyl hydrochloride) belongs to the new group of iminodibenzyl derivatives. The clinical effect of Tofranil resembles an 'unblocking' and brightening of the fixed depressive mood. Although no specific pharmacological basis for its action has yet been established, it is thought that Tofranil acts on the pathological mechanism characteristic of depression and interrupts its further progress.

† These reports are briefly discussed in an article by Dr. M. Russell Clarke, which is published on page 990 of this issue of the *Journal*.

TABLE I. RESULTS OF TREATMENT

Case	*Sex*	*Age*	*Diagnosis*	*Previous treatment*	*Daily dosage*	*Results*	*Side-effects*
1	M	45	Manic-depressive (depressed)	ECT	See below	Recovery	Nil
2	M	40	Manic-depressive (depressed)	ECT	See below	Poor	Nil
3	M	45	Manic-depressive (depressed)	ECT	See below	Recovery	Nil
4	M	54	Manic-depressive (depressed)	ECT	See below	No change	Nil
5	M	50	Manic-depressive (depressed)	ECT	See below	Treatment stopped	Agitation
6	M	48	Manic-depressive (depressed)	ECT	See below	Improvement	Nil
7	M	44	Reactive depression	ECT	*See below	Recovery	Nil
8	M	46	Reactive depression	ECT	See below	Marked improvement	Nil
9	M	58	Senile psychosis (depressed)	ECT	See below	Marked improvement	Nil
10	M	66	Senile psychosis (depressed)	ECT	See below	Marked improvement	Nil
11	M	67	Senile psychosis (depressed)	ECT	See below	Treatment stopped	Nil
12	M	47	Involutional melancholia	ECT	See below	No change	Nil
13	M	53	Involutional melancholia	ECT	See below	No change	Nil
14	M	59	Involutional melancholia	ECT	See below	No change	Nil
15	M	46	Involutional melancholia	ECT	See below	Treatment stopped	Nil
16	F	61	Reactive depression	Nil	See below	Marked improvement	Nil
17	F	54	Manic-depressive (depressed)	ECT and Largactil with amphetamine	See below	Recovered	Dizziness
18	F	48	Reactive depression	ECT	See below	Recovered	Restlessness
19	F	47	Reactive depression	Nil	See below	Recovered	Nil
20	F	56	Reactive depression	ECT	See below	Recovered	Restlessness
21	F	53	Reactive depression	Nil	See below	Recovered	Nil

Dosage = 100 mg. daily, increasing to a maximum of 250 mg. daily, thereafter decreasing until maintenance dose of 100 - 150 mg. attained, given orally.
* = The mg. dosage given in this case was the same as in all other cases with the exception that a combination of tablets and ampoules were used.

CLINICAL EXPERIENCE

My observations on G22355 (Tofranil) were carried out on 21 patients in Valkenberg Hospital. Fourteen patients were chronic cases over the age of 40, and 7 patients were recent admissions. The dosage schedule was as follows: 100 mg. daily, increased to 250 mg. daily, thereafter decreasing to maintenance dose of 100 - 150 mg. daily. The time taken for improvement varied between 4 days and 3 weeks.

Side-effects were minimal. One patient complained of dizziness. A manic-depressive (depressed) patient became highly agitated and actively suicidal, probably due to the fact that Tofranil cleared the psychomotor inhibition.

In 2 patients (recent admissions with reactive depression), the original symptoms became accentuated and they complained of a feeling of fear. However, on continuation of therapy these patients improved markedly and were discharged. In 3 cases therapy was discontinued because of coincidental physical illness, the patients being removed to a clinic. No allergic reactions developed. The drug did not interfere with sleep. Photosensitivity and visual disturbances due to its atropine-like action have been reported, but the general toxicity is claimed to be low.

A summary of the results of the cases treated in a trial series are given in Table I.

RESULTS

Of the 21 cases treated (Table I), 8 recovered, 5 showed a marked improvement, in 3 treatment was stopped because of physical reasons, and in 5 there was no change. Excluding the 3 patients in whom treatment was stopped, this represents a recovery and marked improvement rate of 72%. The following are examples of the results of treatment in a case of recent onset of symptoms, and in a chronic case:

Case 1

This male patient, a recent admission, aged 44 years, presented himself at the Cape Mental Health Clinic, Cape Town, complaining of gross depression coupled with numerous hypochondriacal symptoms. It was obvious that he was basically a neurotic person and that he was suffering from a reactive depression. He was admitted to Valkenberg Hospital as a voluntary patient and after only 4 days began to show a marked improvement. The gross depression lifted and his other complaints became minimal. After a further week's treatment he requested to go and was discharged. He has been seen at an out-patients' clinic since his discharge, and he has maintained his improvement.

Case 2

A man, aged 54, who has been an inmate of Valkenberg Hospital for the past 10 years. He was originally admitted in a state of gross depression associated with hallucinations and persecutory delusions. Despite numerous courses of ECT, little or no improvement was noted.

Before treatment with Tofranil he was dull, dejected, inhibited in all his actions, full of petty complaints and had always to be coaxed to eat. After some 3 weeks of treatment he became brighter and generally more active. He began to help in routine ward work and ate without prompting. He has maintained his improvement on a maintenance dose.

DISCUSSION

The results obtained in treating this small series of cases have proved most gratifying. The best results were obtained in recent admissions although satisfying results were also obtained in long-standing chronic cases.

Recently we have combined Tofranil with ECT for the treatment of severely depressed cases with the most encouraging results. Moreover, we encountered no unpleasant side-effects. Kielholtz and Battegay[1] state that when the action of Tofranil is insufficient, its combination with ECT is recommended since Tofranil reduces the number of treatments required. It is interesting to note that in the trial series many cases responded remarkably well to Tofranil alone after ECT had failed. Azima[2] states that about 80% of patients formerly requiring ECT may no longer require this treatment as the result of the introduction of Tofranil.

From the above observation it would appear that Tofranil has a place in the treatment of hospitalized cases of depression, and that it is useful in out-patient and office practice, especially in treating cases of reactive depression where facilities for psychotherapy and ECT are limited.

SUMMARY

1. Tofranil has a definite place in the treatment of depressive states.

2. It will undoubtedly prove useful in out-patient clinics, especially in the treatment of cases of reactive depression.

3. It has been successfully used in combination with ECT for the treatment of severely depressed cases.

4. In combination with promazine derivatives it will be of use to counteract depressions caused by these derivatives in certain cases.

5. The side-effects are minimal. Special attention should, however, be given to the danger of suicide, which is potentially present in every case of depression, since Tofranil may remove psychomotor retardation.

6. In the present series the recovery/improvement rate was 72%.

The material for this trial was liberally supplied by the Pharmaceutical Division of the J. R. Geigy S.A., Basel, Switzerland.

I wish to thank Dr. T. E. Cheze-Brown, Physician Superintendent, Valkenberg Hospital, Observatory, Cape, for having made it possible for me to carry out this trial, and the Commissioner for Mental Hygiene for permission to publish.

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ASSOCIATION OF NEUROLOGISTS, PSYCHIATRISTS AND NEUROSURGEONS (M.A.S.A.): PRESIDENT'S REPORT*

B. CROWHURST ARCHER, M.D., *President*

I should like, first, to offer our congratulations to Dr. B. P. Pienaar on his appointment as Commissioner for Mental Hygiene for the Union of South Africa and to thank him personally for all the support he has given us throughout the year, both as Commissioner, and as a member of the South African Medical and Dental Council.

I should also like to congratulate Prof. A. M. Lamont on his appointment as Deputy Commissioner for Mental Hygiene and as Professor of Psychiatry at the University of Pretoria.

To Prof. L. A. Hurst, our congratulations and best wishes on his appointment as the first full-time Professor of Psychiatry at the University of Witwatersrand. We are confident that this appointment will do much to facilitate the integration of psychiatry into the teaching of general medicine, and pave the way to similar appointments in our medical schools throughout the Union.

It has been my pleasant task to announce officially that our Vice-president, Dr. Morris Ginsburg, Physician-Superintendent, Sterkfontein Hospital, Krugersdorp was elected the first Travelling Fellow in Psychiatric Medicine of the College of Physicians, Surgeons and Gynaecologists of South Africa and, on your behalf, I wish him every success on his important mission to Europe and America.

I should also like to thank Dr. A. P. Blignault for his great help to us in the literary field and to congratulate him on his appointment as Editor of the *South African Medical Journal*.

Mental Health Service

The theme adopted by the World Health Organization for the year 1959 was 'Mental Illness and Mental Health in the World Today'. It is therefore fitting that I should review briefly what our Group has done in the past year to lay the foundations of a mental health service, which is so urgently required to meet the ever increasing problem of mental illness in this country.

The first essential in any mental health service is, not only to provide good guidance, diagnosis and treatment, but also to offer good teaching and training facilities for medical practitioners, nurses and auxiliary workers. For this reason we welcome the

appointment of the first full-time Professor of Psychiatry to the University of Witwatersrand, which may not altogether be unconnected with the visit of our honoured guest last year, Prof. H. C. Rümke of the Department of Psychiatry, University of Utrecht, The Netherlands.

Your Committee has been greatly encouraged in its educational programme by the President and Council of the College of Physicians, Surgeons and Gynaecologists of South Africa. For, not only was the Faculty of Neurology and Psychiatry the first to be formed within the College, but the Fellowship in Medicine, with either neurology or psychiatry as an additional special subject, has been accepted as a higher qualification by the South African Medical and Dental Council. In addition a Diploma in Psychiatric Medicine, a Travelling Fellowship and a Scholarship in Psychiatry have been established.

Public Relations

The number of articles and editorials in our medical journals dealing with various aspects of mental illness and the need for a mental health service in South Africa, has increased. Reprints of some of the more important articles have been sent to members of the Department of Health, the South African Medical and Dental Council, the Executive of the Federal Council of the Medical Association, and Members of Parliament, as well as to interested bodies overseas. Informed articles on mental health, including editorials, have also appeared in the lay press, and talks on this subject have been broadcast from time to time in both official languages by the South African Broadcasting Corporation.

Further, following the resolutions passed at our last Annual General Meeting, held in Durban in September 1958, the South African Medical and Dental Council has referred the subject of 'better integration of psychiatry into the undergraduate medical curriculum' to their Education Committee for report, and the request for a 'Commission of Enquiry into the present mental health facilities and the future needs of this country' has been referred to the Minister, through the Secretary of Health.

Finally, Government and Opposition members of both Houses of Parliament were kept informed of the mental health needs of the community during the recent health debate.

Administrative Psychiatry

In view of the increasing importance of administrative psychiatry, it was decided to invite the following distinguished members of our profession, who have always been more than interested in psychiatry, to become Honorary Members of our Group:

(1) Prof. G. A. Elliott, *O.B.E.* President of the College of Physicians, Surgeons and Gynaecologists of South Africa.

(2) Dr. B. A. Dormer, Chief Adviser on Tuberculosis to the Union Government.

(3) Dr. J. J. du Pré le Roux, Secretary for Health and Chief and Health Officer of the Union of South Africa.

I am happy to say that all these distinguished gentlemen graciously accepted their appointments.

International Relations

Since the inauguration of the College of Physicians, Surgeons and Gynaecologists of South Africa and the Congress and Scientific Meeting of the Medical Association of South Africa, held in Durban in 1957, overseas authorities and organizations have shown increasing interest in medical developments in this country.

During the past year your Committee has been invited to send reports on the psychiatric services in this country to the Secretary-General of the World Health Organization and to the Director of the American Psychiatric Association with a view to their assisting us with our problems. We have also received enquiries on various aspects of psychiatric practice and requests for literature from medical schools as far apart as Saõ Paulo and Prague and San Francisco and Bangkok. We were also invited to colaborate with Prof. Lawrence C. Kolb, Director of the Department of Psychiatry, Columbia University, New York, in the preparation of the article on psychiatry which will be published in the 18th edition of the *Encyclopaedia Britannica*. Further we were able to comply with the request of Dr. Lothar B. Kalinowsky, Chairman of the Committee of International Relations of the American Psychiatric Association, to provide him with the information he required about South Africa for compilation of the International Roster of Neurologists, Psychiatrists and Neurosurgeons of all the countries of the world.

For these reasons it seemed clear to your Committee that our Group had reached a stage in its development where it should now be prepared to play its part in the international field. It seemed to us that the best way to achieve this end would be for our Association to seek affiliation with the 3 International Organizations corresponding to the 3 major interests of our Group, i.e. the World Federation of Neurologists, the World Federation for Mental Health, and the World Federation of Neurosurgical Societies. This recommendation is one of major policy and would involve our Group in an increase in the annual subscription. It is therefore beyond the competence of the Executive Committee and a proper subject for discussion and action by an Annual General Meeting. This important matter has therefore been placed on the agenda .

Correspondence

The Hon. Secretary has dealt with a considerable volume of general correspondence during the year. A large part of this has been concerned with implementing the resolutions adopted at our last Annual General Meeting which was held in Durban during September 1958, and with the revision of professional fees relating to contract practice and medical aid societies. Recently your Committee has drawn up an increased scale of professional fees with provision for the introduction of the decimal system. This new scale was forwarded with a supporting memorandum to the Central Committee for Contract Practice, and arrangements have been made for our Group to be represented at their discussions.

It is clear that the introduction of some form of national health insurance is necessary to meet the needs of the 'middle income group'; but the draft constitution of the Medical Services Plan for the Southern Transvaal contained a restrictive clause excluding modern psychiatric services. This would mean that over 50% of common illness would not be legally covered by the scheme. Your Committee therefore telegraphed a resolution to the Secretary of the Medical Association, deploring the fact that this scheme excludes modern psychiatric treatment and requested that the protection and sponsorship of the Medical Association should be immediately withdrawn from the scheme until such time as this apparent anachronism has been rectified.

Medical Directory

I am pleased to report that the printing of the first Medical Directory of South Africa has been completed and, due largely to the efforts of your Committee, it will be issued early next month.

CONCLUSION

It now only remains for me to thank you for your loyal support during the last two years which has made an onerous duty, if not a light one, a very pleasant one.

May I, in conclusion, express my appreciation of all the help we have received from the headquarters staff of the Medical Association and here I should like to add a very personal 'thank you' to Dr. A. H. Tonkin, Secretary of the Medical Association.

To Dr. R. W. S. Cheetham, our Hon. Secretary, who no doubt has found me a hard task master, I am deeply grateful for his loyal support and frank criticism. To our Vice-president, Dr. Morris Ginsburg—of whom we are all justly proud—my thanks for his wise counsel; and may we wish him every success when he becomes our first ambassador-at-large next year.

* Address delivered at the Annual General Meeting of the Group held in East London, September 1959.

TRANSVAAL SOCIETY OF PATHOLOGISTS

SUMMARIES OF SCIENTIFIC PAPERS *

MITOTIC ACTIVITY IN THE HUMAN LIVER

DR. I. W. SIMSON, *Department of Pathology, University of Pretoria*

In the absence of hepatic necrosis, marked mitotic activity in the liver is uncommon. A case was described in which numerous mitoses in all phases occurred in the liver of a patient who died of uraemia due to a lower nephron nephrosis. Mitotic activity in the liver in cases dying in acute or subacute renal failure has been previously described and this correlation was confirmed in a small series of cases. The pattern of the differential count of the mitoses resembled that described in malignant cells. The significance of these findings, with particular reference to liver cancer, was briefly discussed.

THE LATE LACTOSE FERMENTING PROPERTY OF *SHIGELLA SONNEI*

PROF. J. N. COETZEE, *Department of Microbiology, University of Pretoria*

Results of two kinds of fluctuation tests indicated that this property was due to selective overgrowth of the wild type by mutants capable of rapid utilization of the additional source of energy. Mutation rates calculated by three methods agreed reasonably well and an average value is $c\ 1\times10^{-9}$/bacterium/generation. The back mutation rate of the lactose fermenting mutants was calculated by means of continuous culture experiments and proved to be $c\ 1\times10^{-3}$/bacterium/generation. Should these results be applicable *in vivo* it is unlikely that lactose positive variants of *Sh. sonnei* will ever be isolated directly from patients.

CIRRHOSIS OF THE LIVER AND CARCINOMA OF THE LIVER IN JOHANNESBURG

PROF. B. J. P. BECKER, *University of the Witwatersrand, Johannesburg* and DR. C. B. CHATGIDAKIS, *Pneumoconiosis Research Unit, Johannesburg*

A survey of 10,000 consecutive autopsies utilizing the definitions and classification of cirrhosis of the liver proposed by the International Union against Cancer shows that in Johannesburg the incidence of cirrhosis of the liver is equal in European and Bantu males and more frequent in European females than Bantu females. The survey showed that approximately one-third of the cirrhoses in Europeans were of the post-necrotic type, one-third were fatty cirrhoses, one-sixth septal (type A portal) and the remainder miscellaneous; whereas in the Bantu, two-thirds were post-necrotic, one-sixth septal and one-sixth miscellaneous. Fatty cirrhoses in the Bantu were unusual (5%). There were no cases of cirrhosis ascribable to schistosomiasis in either race in this series, and no case of Bantu cirrhosis which was ascribable to haemosiderosis. The authors discussed the infrequency of the classical 'nutritional' cirrhosis (fatty cirrhosis) in Bantu subjects. Similar patterns of cirrhosis have been reported in Uganda Africans by Steiner and Davies. The authors confirmed the high frequency of malignant hepatoma in the Bantu. This was evident in the non-cirrhotic Bantu liver, but the incidence rose to nearly 50% of Bantu cirrhotics, especially in male subjects. This spectacular tendency to malignancy was confined to the post-necrotic and septal types of cirrhosis. The same tendency, but to a lesser degree (8%), was seen in these types of cirrhosis in European subjects. The morphological features of the common type of cirrhosis in the Bantu suggest a viral aetiology.

DIE HISTOLOGIESE DIAGNOSE VAN GOUSIEKTE

DR. J. D. SMIT, *Departement Patologie, Onderstepoort*

Gousiekte is 'n siekte wat voorkom onder beeste en skape en word veroorsaak deur die vreet van verskillende bossies. Dié veroorsaak 'n chroniese miokarditis waaraan die dier skielik vrek na 'n latente periode van 6 tot 10 weke.

Geen simptome word gesien nie, die dier slaan skielik dood neer. By die lykskouing word alleen 'n algemene veneuse kongestie gesien en in sommige gevalle kan makroskopies 'n fokale fibrose van die miokardium gesien word wat selfs mag lei tot 'n uitgesproke uitsetting van die hart. Histologies kom 'n fokale fibrose voor wat in werklikheid 'n vervanging van beskadigde spierbondels is. 'n Mate van rondesel infiltrasie kan gesien word. Die letsel is baie fokaal en kan maklik misgekyk word. Die letsel kom gewoonlik voor in die punt van die hart.

Met behulp van kleurskyfies word die histologiese letsels wat veroorsaak word deur verskillende plante ontleed in 'n poging om 'n histologiese diagnose te maak. 'n Histologiese ondersoek van bepaalde dele van die hart is die enigste betroubare metode van ondersoek wat tot 'n diagnose kan lei.

* Read at a meeting of the Society, held at Onderstepoort on 14 March 1959

THE INTERACTION OF ERYTHROCYTES AND BACTERIAL ENDOTOXINS. I. ERYTHROCYTE UPTAKE OF ENDOTOXINS

DRS. V. BOKKENHEUSER and H. J. KOORNHOF, *South African Institute for Medical Research, Johannesburg*

In recent years, many authors have employed endotoxin-coated erythrocytes as antigen suspensions for serological studies. A characteristic feature has been the diversity of opinions in regard to the sensitivity of these haemagglutination tests. Some workers found that the tests were considerably more sensitive than the corresponding bacterial agglutination tests. Others held the opposite view.

The present study deals with an investigation into the factors influencing the haemagglutination reaction.

The endotoxin was derived from *S. typhi* (TO-901) as a dehydrated powder. Rabbit erythrocytes, washed and suspended in isotonic saline, were used throughout the experiments.

A unit of endotoxin (EAU) was defined as the smallest amount of endotoxin—under standard conditions—capable of rendering a 2 ml. 10% suspension of erythrocytes agglutinable in homologous serum. One EAU was found to be equivalent to 0·16 mg. of the dehydrated endotoxin, but the actual uptake required for agglutination, was shown experimentally to be 0·12 mg.

The uptake of endotoxin was dependent not only on the absolute amount of endotoxin present, but also on its concentration, to which the speed of uptake was proportional. Furthermore, the speed of uptake varied with the temperature, being 5-6 times faster at 37°C than at 4°C.

The maximum uptake of endotoxin was not conclusively established, but it was shown that the erythrocytes could bind at least 200-225 times the minimum amount (0·12 mg.) required for haemagglutination under standard conditions. The more antigen attached to the erythrocytes, the less anti-serum they require for agglutination; thus, the titre of a given serum will vary according to the quantity of endotoxin absorbed onto the cells.

It may be concluded that the discrepancy in results obtained by haemagglutination is due mainly to quantitative differences in endotoxin coating. This could be overcome by rigorous standardization of which accurate measurement of endotoxin is an integral part.

ON THE HISTOGENESIS OF KAPOSI'S HAEMANGIOSARCOMA

DR. W. J. PEPLER, *Department of Pathology, University of Pretoria*

The non-specific esterases, pseudocholinesterases, and acid and alkaline phosphatases, have been investigated in biopsies from 6 clinically and histologically typical cases of Kaposi's haemangiosarcoma. A strong pseudocholinesterase and acid phosphatase was found in the spindle shaped cells of the tumour. The non-specific esterase was detected only in occasional phagocytes in the vicinity of areas of haemorrhage and the alkaline phosphatase was localized to the capillary walls. These findings are in favour of a neural rather than a reticulo-endothelial, muscular, fibroblastic, or endothelial origin of the tumour.

IMMUNITY STUDIES ON *CL. WELCHII* TYPE B BETA TOXIN

DR. B. C. JANSEN, *Department of Bacteriology, Onderstepoort*

Cl. welchii Type B is responsible for lamb dysentery in sheep. The beta toxin produced by this organism was converted into toxoid by means of formalin and precipitated with 1·5% potassium alum. Groups of sheep showing no antitoxin level in their blood were given two injections of the A.P.T. at varying intervals. The injections were given at the following levels of dosage: 6·25, 25, 50, 100, and 200 Lf. The antitoxin levels of the blood of these sheep were determined at weekly intervals after the second injection. It was proved statistically that two injections of 6·25 Lf A.P.T., spaced at an interval varying from 2 to 5 weeks, produced the same level of immunity as the higher doses administered under the same conditions.

NORMAL PROSTATIC ACID PHOSPHATASE VALUES IN BANTU AND EUROPEAN MEN

DR. L. S. DE VILLIERS, *Department of Pathology, University of Pretoria*

In a comparative study of acid phosphatase values in 'normal' Bantu and White men higher values were found in the Bantu of both the total acid phosphatase as well as the specific prostatic acid phosphatase according to the Fishman-Lerner method. An attempt was made to explain these differences in the findings reported of higher oestrogen levels in the Bantu.

THE HISTOLOGY OF THE CYTOPATHOGENIC CHANGES PRODUCED IN MONOLAYER EPITHELIAL CULTURES BY CERTAIN VIRUSES

DR. M. DE LANGE, *Department of Pathology, Onderstepoort*

A brief description was given of the technique of making slide preparations of roller tube cultures for detailed microscopic examination. The cytopathogenic changes produced by the following viruses were described and illustrated with photomicrographic coloured transparencies:

'BZD'—an orphan virus, originally isolated in lumpy skin disease material.

'Neethling' and 'Allerton' viruses associated with lumpy skin disease.

'Ecbo'—an orphan virus isolated from bovine faeces and probably belonging to the polio group.

Rift Valley fever and Wesselsbron disease viruses.

Thereafter Dr. K. E. Weiss, of the Onderstepoort Virology Department, described the influence of varying concentrations of lactalbumen in the media on the cytopathogenesis of 'Neethling' virus in tissue culture, also illustrated with coloured transparencies.

SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH

SUMMARIES OF PAPERS *

FURTHER WORK ON THE ISOLATION OF *SALMONELLA TYPHI* FROM SEWAGE

Mr. R. G. Robinson

Earlier methods were briefly reviewed and an investigation of the isolation of *S. typhi* and *S. paratyphi B* from the sewage of a mental hospital in which known carriers lived, was described. The best recovery was obtained by suspending pads of alginate wool in the flowing sewage for 48 hours and culturing the whole pad in selenite F selective liquid medium and subsequent platings from the culture onto Wilson and Blair's medium. The greatest frequency of recovery of *S. typhi* was obtained when the liquid selective medium was incubated for 12-18 hours before subinoculation; incubation for 18-24 hours gave the optimum recovery of *S. paratyphi B*. It was found that diluting the selenite F medium to 1 in 10 before inoculation gave better recoveries, especially when the number of enteric organisms was low.

SALMONELLA AND SHIGELLA INFECTIONS IN APPARENTLY HEALTHY RURAL BANTU SCHOOL CHILDREN: A TWELVE-MONTH SURVEY

Mr. N. J. Richardson

The results of examining the faeces of 124 school children from a Native reserve 7 times at regular intervals over a period of 1 year, were described. Of 772 specimens, 6·5% yielded salmonella organisms and 4·8% gave shigella. During the survey 35·5% of the individuals were found to be infected with salmonellae and 25% with shigellae. Because of absenteeism and some of the children leaving school, only 75 of the children were examined all 7 times. From this group 44·0% experienced at least one salmonella infection and 29·3% one shigella infection. Considering the infections together, salmonellae or shigellae were recovered from 72% of the individuals. The opinion was expressed that over a period of a year practically all children will experience one, and many of them several attacks of the two pathogens. The infections appeared to be of short duration and there was no evidence of chronic carriers. The consistency of the faeces and the oral temperatures suggested that the infections were mild and mainly subclinical. Salmonellosis showed a seasonal variation with the highest incidence in December. Shigellosis was distributed evenly throughout the year. The recovered salmonellae were of 20 types. *S. typhi* and *S. paratyphi A, B* and *C* were not isolated. Members of all shigella groups were encountered. All recovered strains were sensitive to streptomycin, chloromycetin, terramycin, achromycin, and neomycin. Most of them were sensitive to aureomycin and erythromycin. In comparison salmonella strains isolated from the Johannesburg area showed signs of increased resistance to the same antibiotics. Water was probably incriminated in the conveyance of the infections.

SOME APPLICATIONS OF MICROSCOPIC HISTOCHEMISTRY

Mr. D. E. Munday

The subject was described as the demonstration *in situ* of chemical complexes in tissues and tissue secretions by chemical and physical methods. Proved methods are now available for demonstration of carbohydrates, lipids, proteins and enzymes, and also of a number of inorganic substances.

Three examples were drawn from current work in the Pneumoconiosis Research Unit. The presence of silica dust in the lungs of miners can be confirmed by slowly heating sections to 650°C and then cooling and treating with concentrated hydrochloric acid, after which examination in polarized light shows the silica pattern.

A second application is made in an attempt to confirm a diagnosis of pleural mesotheliomata by demonstration of increased amounts of hyaluronic acid in the sections by several methods, and abolition of the staining reactions by the specific enzyme, hyaluronidase. Evidence that the lesions of silicosis may be formed as the result of an antigen/antibody reaction is being sought by use of the Coons and Kaplan technique; sections are stained with a globulin fraction which may contain antibody and which has been coupled with a fluorescent dye. Under ultraviolet light sites where antigen in the tissue has combined with its specific antibody are then fluorescent.

Another histochemical method which may provide evidence for the immunological basis of silicosis depends on the fact that tissues producing antibody contain plasma cells which have a high concentration of ribonucleic acid in their cytoplasm. The ribonucleic acid is shown up by appropriate staining, and shown to be absent from control sections which have been treated with the specific enzyme ribonuclease. Mast cells, which contain granules of heparin, may also be important in the development of silicotic lesions. The presence of heparin, an acid mucopolysaccharide, can be shown by metachromatic staining, again using enzyme-treated control sections.

It is important that as many methods as are available for detecting a given substance should be used to provide confirmation of results. Accuracy of identification can only be assured if strict controls of the techniques are carried out.

* Presented at a Staff Scientific Meeting, 10 August 1959.

COLLEGE OF PHYSICIANS, SURGEONS AND GYNAECOLOGISTS OF SOUTH AFRICA

ELECTION OF NEW COUNCIL

The results of the recent election for the new Council of the College are as follows:

Johannesburg

Prof. G. A. Elliot — President.
Mr. W. Kark — Chairman, Examinations and Credentials Committee.
Mr. W. D. Trubshaw, Dr. M. M. Suzman, Mr. J. A. Douglas, Dr. F. Daubenton, and Mr. J. M. Edelstein.

Cape Town

Mr. T. B. McMurray — Hon. Registrar.
Mr. A. J. Helfet — Hon. Archivist.
Dr. A. H. Tonkin — Hon. Treasurer.
Mr. J. A. Currie, Prof. J. F. Brock, Prof. F. Forman, Prof. J. T. Louw, and Dr. A. D. Landau.

Durban

Mr. A. G. Sweetapple — Vice-President.
Dr. B. W. Crowhurst-Archer.

Bloemfontein

Dr. R. Theron — Vice-President.

EXAMINATION RESULTS

Fellowship of the College of Physicians of South Africa, F.C.P. (S.A.)

Dr. Ida Freiman Dr. D. M. Klachko Dr. G. B. Lapinsky
Dr. B. L. Gollach Dr. S. Kornowaloff Dr. A. L. Maresky
Dr. I. D. Huskisson

Diploma in Midwifery of the College of Obstetricians and Gynaecologists of South Africa, Dip. Mid. C.O. and G. (S.A.)

Dr. J. H. de Kock Dr. S. C. Hossy Dr. R. A. van Rooyen

Fellowship of the College of Obstetricians and Gynaecologists of South Africa, F.C.O. and G. (S.A.)

Dr. H. J. H. Classens Dr. L. E. Whitfield

Fellowship of the College of Surgeons of South Africa, Part I, F.C.S. (S.A.)

Dr. R. W. Duursma Dr. A. Stein Dr. M. A. Wulfsohn
Dr. D. M. Gruebel Lee

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

VACANCY—ASSISTANT EDITOR

Applications are invited from medical practitioners for the full-time post of Assistant Editor in the service of the Medical Association of South Africa at its Head Office.

The salary scale attaching to the post is £2,180×60—2,600 per annum. The successful applicant must join the Association's Superannuation Fund.

Applications, which should contain details of status, qualifications and experience, must reach the Secretary, Medical Association of South Africa, P.O. Box 643, Cape Town, before 31 December 1959.

A. H. Tonkin
Secretary

Medical House
Cape Town
28 October 1959

VAKATURE—ASSISTENT-REDAKTEUR

Aansoeke word van geneeshere ingewag om die voltydse betrekking van Assistent-Redakteur in diens van die Mediese Vereniging van Suid-Afrika aan die Hoofkantoor.

Die salarisskaal aan die betrekking verbonde is £2,180×60—2,600 per jaar. Die suksesvolle applikant moet by die Vereniging se pensioenskema aansluit.

Aansoeke moet besonderhede van status, kwalifikasies en ondervinding insluit, en moet die Sekretaris, Mediese Vereniging van Suid-Afrika, Posbus 643, Kaapstad, bereik vóór 31 Desember 1959.

A. H. Tonkin
Sekretaris

Mediese Huis
Kaapstad
28 Oktober 1959

PASSING EVENTS : IN DIE VERBYGAAN

Cape of Good Hope Faculty of the College of General Practitioners. Mr. W. Phillips will deliver a lecture and give a clinical demonstration on 'Respiratory difficulties and how to manage them in general practice' on Sunday 29 November at 10 a.m. in the E-floor Lecture Theatre, Groote Schuur Hospital, Observatory, Cape.

* * *

South African Institute for Medical Research, Johannesburg. Staff Scientific Meeting. A meeting will be held in the Institute Lecture Theatre on Monday 23 November at 5.10 p.m. Films on 'Phaeochromocytoma', 'The mobility of spermatozoa', 'The cold agglutination of human blood', and 'Morphological changes in *E.coli* under the influence of antibacterial substances' will be shown. Tea will be served at 4.45 p.m. and visitors will be welcome.

* * *

Dr. C. Merskey, of Cape Town, left on 17 November for New York, where he will undertake research in haematology at the Albert Einstein College of Medicine during 1960. *En route* to the USA Dr. Merskey will visit medical centres in Israel and the UK.

Dr. M. M. Baskin, M.B., Ch.B. (Cape Town), M.R.C.O.G., has commenced practice as a specialist obstetrician and gynaecologist at 435-7, West Walk, West Street, Durban. Telephones: Rooms 69779, residence 882145.

Dr. M. M. Baskin, M.B., Ch.B. (Kaapstad), M.R.C.O.G., praktiseer nou as spesialis in verloskunde en ginekologie te West Walk 435-7, Westraat, Durban. Telefone: Spreekamer 69779, woning 882145.

* * *

Cancer Current Literature Index. The Excerpta Medical Foundation have announced the publication of an up-to-date bibliographical indexing service covering the world's current medical literature in the field of cancer, entitled *Cancer Current Literature Index*. This publication has been made possible by a grant from the American Cancer Society, Inc., New York, and will appear at intervals of 2-3 weeks beginning with Vol. 1, no. 1 September 1959. Each yearly volume will contain approximately 4,500 references from some 3,000 medical journals published all over the world, including those from the USSR. Further information may be obtained from the Excerpta Medical Foundation, 111 Kalverstraat Amsterdam-C. The Netherlands.

South African Paediatric Association (M.A.S.A.). The Executive Committee of this Group has now been moved to Cape Town. The office bearers are as follows: Chairman, Dr. I. Mirvish (Cape Town); Vice Chairman. Prof. F. J. Ford (Cape Town); Hon. Secretary/Treasurer, Dr. R. McDonald, c/o Department of Child Health, University of Cape Town, Medical School, Observatory, Cape; additional members, Drs. B. Epstein (Pretoria), E. Fasser (Pretoria), P. M. S. Fischer (Bloemfontein), Seymour Heymann (Johannesburg), and H. L. Wallace (Durban).

* * *

An Inter-University Surgical Forum, in conjunction with the Association of Surgeons of South Africa (M.A.S.A.), will be held in the Physiology Lecture Theatre, Medical School, University of Cape Town, from 4.00-6.00 p.m. on Wednesday 25 November 1959. The programme will consist of the following papers: 'Aspects of the aetiology and treatment of peptic ulcer' by Prof. D. J. du Plessis (Johannesburg), 'Direct arterial surgery' by Mr. W. G. Schulze (Cape Town), 'Diseases of the thyroid at the University of Pretoria, by Prof. C. H. Derksen (Pretoria), and 'Diseases of the thyroid at the University of Cape Town· by Mr. A. J. Walt (Cape Town). All practitioners are welcome to attend this Forum.

Dr. Herman J. H. Claassens, M.Med. (O. & G.), M.R.C.O.G., L.K.O. en G. (S.A.), tree op 1 Desember in praktyk as verloskundige en ginekoloog te Mediese Sentrum 709, Heerengracht, Kaapstad, na 2 jaar nagraadse studie in Brittanje en die V.S.A. Telefone: Spreekkamer 3-6772, woning 44-6356, indien geen antwoord 3-1256.

Dr. Herman J. H. Claassens, M.Med. (O. & G.), M.R.C.O.G., F.C.O. and G. (S.A.), will commence practice as an obstetrician and gynaecologist at 709 Medical Centre, Heerengracht, Cape Town, on 1 December, after 2 years postgraduate study in Britain and the USA Telephones: Rooms 3-6772, residence 44-6356, if no reply 3-1256.

* * *

Correction. Will readers please note that the letter on the 'Congress Scientific and Trades Exhibitions', published in the Correspondence Columns of the *Journal* of 31 October (**33,** 926), was written by Mr. Wayne in his personal capacity and *not* as Chairman of the Exhibitors' Association.

NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

STEMETIL

Maybaker (S.A.) (Pty.) Ltd., announce the introduction of Stemetil Forte syrup containing 25 mg. of prochlorperazine methanesulphonate in each fluid drachm, and supplied in bottles of 4 fl. oz. This presentation of Stemetil is intended for adults in the treatment of psychotic illnesses only.

The primary indication for Stemetil in psychiatry is in the management of chronic schizophrenia, particularly of the hebephrenic type. There is evidence to suggest that Stemetil may make withdrawn, autistic-catatonic schizophrenic cases more accessible and more communicative, and therefore more amenable to rehabilitation and resocialization programmes. A good response has been obtained in certain paranoid cases.

PEROLYSEN

Maybaker (S.A.) (Pty.) Ltd. announce that 1 mg. tablets of Perolysen brand pempidine tartrate are now available in a packing of 500 tablets.

Perolysen is indicated for the treatment of selected cases of hypertension, particularly severe essential, and malignant, hypertension.

BOOK REVIEWS : BOEKBESPREKINGS

LUNG CAVITIES AND ENDOBRONCHIAL TUBERCULOSIS

Treatment of Lung Cavities and Endobronchial Tuberculosis, with special reference to treatment in Malaya. By Beryl E. Barsby, M.D., M.R.C.P. Pp. vii + 147. 46 figures. 20s. net + 1s. 3d. postage abroad. Edinburgh and London: E. & S. Livingstone Ltd. 1959.

This is an account of research work into the incidence of endobronchial disease in the mixed population of Malaya, and the influence of tuberculous disease of the bronchial tree on the formation, healing and treatment of cavities. Unfortunately the total number of cases is small and the follow-up period rather short for a satisfactory appraisal of the treatment recommended. The illustrations chosen to augment the text are not well reproduced and in many cases careful search is required to pick up the point made. J.B.P.

AUTOLYTIC DISEASES IN SURGERY

Autolyse-Krankheiten in der Chirurgie. Klinische und experimentelle Studien zur Pathogenese und Therapie einiger akuter, insbesondere posttraumatischer Krankheitsbilder. Von Priv.-Doz. Dr. L. Koslowski. viii + 160 Seiten. 60 Abbildungen. 15 Tabellen. Kartoniert DM 19.80. Stuttgart: Georg Thieme Verlag. 1959.

The whole of this volume is devoted to necrosis, autolysis and heterolysis in the human body. Special attention is given to pancreatitis, its aetiology and lines of approach during acute attacks. Theories of causation such as venous thrombosis, allergic reaction, infection and toxic substances are mentioned and discussed. The author finds it interesting that intravascular injection of bile salts does not precipitate pancreatitis, in contrast to extravascular spilling.

An extensive résumé is given of renal insufficiency following crush syndrome.

Unlike American authors, the author of this work does not seem to lay overmuch emphasis on potassium absorption as a cause of toxicity and death.

The chapters throughout this book are interesting as a thorough review of the latest theories on the process of necrosis. The author specially stresses the consequences following injections of antibiotics and of antitetanic serum. D.J.H.

OBSTETRIC PROBLEMS

Practical Obstetric Problems. 2nd edition. Dr. Ian Donald, M.B.E., M.D., B.S. (Lond.), B.A. (Cape Town), M.R.C.S. (Eng.), L.R.C.P. (Lond.); F.R.F.P.S. (Glas.), F.R.C.O.G. Pp. xvi + 712. Illustrations. 55s. net. London: Lloyd-Luke (Medical Books) Ltd. 1959.

As its title implies, this is not a text-book; it is a work which deals with problems in an interesting, informative and entertaining way. It is not a tabulation of obstetrical facts, but it deals in a practical way with the difficulties met in practice. The opinions and arguments which are so well expressed will find appreciation in the student or practitioner who knows his subject. The general practitioner particularly will find this a valuable book of reference. A.H.T.

BACTERIOLOGY AND MYCOLOGY

Bacterial and Mycotic Infections of Man. 3rd edition. Edited by René J. Dubos, Ph.D. Pp. xii + 820. 116 illustrations. 63s. net. London: Pitman Medical Publishing Co. Ltd. 1959.

This edition has been almost completely rewritten to include recent discoveries made since the last edition was published in 1952. There are 37 contributors, each expert in the particular field allotted to him. The various organisms and the diseases caused by them are treated in a general manner, to include all the essential features of pathogenesis, diagnosis and treatment, without too much unnecessary practical detail, which is preferable for the more general reader.

The mycology section, still written by Conant, has been considerably re-arranged and extended, and the sections on serology, chemotherapy and blood groups have been revised.

This book should prove as useful as the previous editions to students and medical practitioners wishing to keep abreast with the recent developments in these subjects. A grant from the National Foundation enables the printers to offer it at a price reasonable for a book of this calibre. P.D.

OBSTETRIESE EN GINEKOLOGIESE PRAKTYK

British Obstetric and Gynaecological Practice. (*Gynaecology.*) 2de uitgawe. Geredigeer deur Sir Eardley Holland, M.D. (Lond.), F.R.C.P., F.R.C.S., F.R.C.O.G. en Aleck Bourne, M.A., M.B., B.Ch. (Cantab.), F.R.C.S., F.R.C.O.G. Pp. xii + 891. Illustrasies. 105s. net. Londen: William Heinemann Mediese Boeke Bpk. 1958.

Die eerste uitgawe van hierdie boek het in 1955 verskyn. 'n Moderne neiging is gevolg en erkende Britse outoriteite is genader om hoofstukke op te stel oor die aspekte van ginekologie waarin hulle uitgeblink het. Die boek het 'n mens dus 'n insae gegee in die denkwyse, kliniese methodes en erkende ‚konserwatisme' van 'n groep vooraanstaande Britse ginekoloë. Die boek was 'n groot sukses.

Die tweede uitgawe het nie veel wysigings nodig gehad nie. Daar is 'n paar byvoegings, soos byvoorbeeld die nuutste resultate in die behandeling van karsinoom van die serviks en genitale tuberkulose. Die populariteit van hierdie boek as 'n naslaanboek behoort dus voort te leef. J.N.d.V.

VITAL STATISTICS

Elements of Vital Statistics. By B. Benjamin, B.Sc., Ph.D., F.I.A., F.S.S. Pp. 352. 56s. net. London: George Allen & Unwin Ltd. 1959.

In rewriting Newsholme's *Elements of Vital Statics* the author's avowed aim that 'the present volume is intended for those not equipped for higher mathematical investigation' has been achieved. Throughout, practical guidance is given on the statistical presentation and interpretation of everyday vital occurrences affecting the individual lives of the community.

Consequently the well-written book is particularly suitable for workers primarily concerned with this side of vital statistics. The very advanced student, though certain to find much of interest, will naturally require supplementary works on vital and general statistical theory. This book should prove a valuable aid to medical officers of health and other public administrators, not only facilitating a true assessment of vital events concerning their community, but also serving as a basis for balanced future planning of the needs of that community.

The chapters on the measurement of morbidity (both generally and as applied to specific diseases and conditions) and the remarks regarding international comparability and statistical standardization are specially noteworthy. E.J.H.F.

PRACTICAL HAEMATOLOGY

Praktische Hämatologie. Von Prof. Dr. H. Begemann und Dr. H.-G. Harwerth. Pp. xii + 264. 25 Abbildungen einschliesslich 2 farbigen Tafeln. 17 Tabellen. DM 29.80. Stuttgart: Georg Thieme Verlag. 1959.

Haematology is becoming more and more complicated, and general practitioners and students can no longer cover the whole field in their reading. Begemann and Harwerth have therefore written this manual of haematology which meets the needs of practitioners and students. It deals with diseases of myelo- and erythropoiesis, lesions of lymph nodes, splenomegaly, haemorrhagic diatheses, dysproteinaemia, and therapy of diseases of the blood. In the last chapter haematological methods are described. For every disease the authors give a short description of the symptoms, laboratory findings, prognosis and therapy. That is all viewed from a practical point of view and unnecessary theoretical discussions are omitted. This does not mean incompleteness, but a maximum of facts stated in a very short and clearly written text. In the chapter on therapy Begemann and Harwerth mention American and British drugs as well as German, Swedish and Swiss, thus avoiding the use of only one national pharmacopoeia. Every practitioner, who is not a specialist haematologist, will find valuable information in this manual. H.W.W.

IMPLANTATION OF OVA

Memoirs of the Society for Endocrinology, No. 6. Implantation of Ova. Proceedings of a Conference held at the Ciba Foundation, London, on 27 November 1957. Edited on behalf of the Society by P. Eckstein. Pp. vii + 97. Illustrated. 30s. net. London: Cambridge University Press. 1959.

This is a book very much for the specialist in the experimental physiology of gestation. The reviewer looked in vain for any points remotely connected to clinical practicability. The chapter by Robson on substances which inhibit pregnancy was interesting; colcemid will apparently do so quite satisfactorily in mice; but of the various substances discussed none were applicable to man. The contributors came from Britain, France and Israel and certainly represent the very best in their field. All contributions appear to reach a high standard in a rather rarefied atmosphere. W.P.U.J.

ORTHOPAEDIC SURGERY

Orthopaedic Surgery. 5th edition. By Sir Walter Mercer, M.B., Ch.B. (Edin.), M.Ch.Orth. (Liv.) (Hon.), F.R.C.S. (Edin.), F.A.C.S. (Hon.), F.R.C.S. (Eng.) (Hon.), F.C.S.So.Af. (Hon.), F.R.C.S.I. (Hon.), F.R.S. (Edin.). Pp. xi + 1075. 422 figures. 90s. London: Edward Arnold (Publishers) Ltd. 1959.

It is 9 years since the fourth edition of this book, which may now be considered an orthopaedic classic, was written. Although the size has increased but slightly (by 59 pages) the price has almost doubled. In spite of this no teacher of orthopaedic surgery, nor student, can afford to be without it. An extensive revision of the previous edition has been carried out and the book has been brought thoroughly up to date. It is a pity that legends facing figures 295 and 296 have been transposed, but this is a very minor criticism of this *magnum opus*.

The chapter devoted to the discussion and treatment of cerebral palsy has been written by Mr. George Pollock, who recently visited and lectured in South Africa on this very problem. The subject of congenital dislocation of the hip has been dealt with by Mr. G. P. Mitchell, and the recent work of Somerville and others has been inkorporated.

All the qualities which have made previous editions of this book one of the medical 'best sellers' are retained, and this edition may be very strongly recommended. A.S.

INTERNATIONAL BILHARZIA

International Work in Bilharziasis, 1948-1958. Pp. 58. 1s. 9d. Also published in French. Geneva: World Health Organization. Local Sales Agent: Van Schaik's Bookstore, Pty. Ltd., P.O. Box 724, Pretoria. 1959.

This little booklet is a *sine qua non* for all workers interested in bilharzia. The work sponsored by the World Health Organization on this subject is not adequately appreciated and this publication should indicate something of their activities, which cover a surprising range. In addition, the published figures, maps and pictures will prove very useful to teachers and administrators.

The chapter on 'bilharziasis as a man-made disease' deserves wide publicity in this country, where extending irrigation is likely to increase the parasite load to a dangerous level. The need for further research is apparent from the stress which this publication lays upon the difficulties of mollusc control, sanitation and education.

This book can be heartily recommended. R.E-D.

SKIN AND VENEREAL DISEASES

Lehrbuch der Haut- und Geschlechtskrankheiten. 8., neubearbeitete Auflage. Von Prof. Dr. Dr. h.c. W. Schönfeld. XVI + 546 Seiten. 339 Abbildungen. Ganzleinen DM 49.50. Stuttgart: Georg Thieme Verlag. 1959.

On the eve of his retirement from his official academic position at the University of Heidelberg, Professor Schönfeld, as he explains in the foreword, has deemed it desirable to issue a revised 1959 edition of his popular text-book on skin and venereal diseases. The book first appeared in 1938 and the 1957 edition was reviewed in this *Journal* (**31,** 322).

Two new chapters have been added to the latest edition, one on haemorrhoids and one on the so-called 'new disease'. New photographs have been added and some of the old ones omitted.

One feels that these minor changes were more a labour of love than a necessary improvement to a work that on account of its completeness, conciseness and authority, and the excellence of its illustrations, has established itself as a standard work for the study of these diseases by German-speaking students and practitioners.

One alteration, a very minor one, is perhaps a sign of the times. The Anglo-American term 'sarcoidosis' has now replaced the name 'morbus Boeck' both in the text and in the index. Many readers, though, may object to its inclusion with granuloma annulare in that part of the book dealing with the tuberculides.

Conservatism is, however, abundantly evident in the section on venereal diseases, where we can still read about mercury inunctions as one of the means of treating syphilis. Penicillin, to be sure, is given pride of place but the fact that it is frequently combined with injections of bismuth preparations shows that the author does not rely on it entirely to achieve fundamental cure in all cases of syphilis. The tests of cure for gonorrhoea, including the deliberate mechanical and chemical irritation of the urethra, also read strangely today. To some of us it all sounds like an attempted resuscitation of the dodo. C.K.O'M.

IRON METABOLISM

Eisenstoffwechsel. Beiträge zur Forschung und Klinik. Bearbeitet von zahlreichen Fachgelehrten. Herausgegeben von Prof. Dr. W. Keiderling. XIV + 298 Seiten. 138 zum Teil mehrfarbige Abbildungen. Ganzleinen DM 48.00. Stuttgart: Georg Thieme Verlag. 1959.

The rapid advance during the past 25 years in our knowledge of iron metabolism is reflected in this book. Well written articles by distinguished German, French and American authorities, to name only a few, provide a useful source of information about the biochemical and physiological facts of iron metabolism, together with some aspects of research techniques recently employed. A chapter on the study of iron metabolism under a variety of clinical-pathological conditions is of particular interest, the latter being made possible by new quantitative iron estimations. In this field emphasis has been laid on the contributions by Prof. L. Heilmeyer, to whom the book is dedicated. Each article is supported by well-chosen references, elucidating diagrams, charts and tables. For all those interested in the subject it is certainly a book worth possessing. J.G.S.

JAARBOEK VAN OBSTETRIE EN GINEKOLOGIE

The Year Book of Obstetrics and Gynaecology, 1958-59. Geredigeer deur J. P. Greenhill, B.S., M.D., F.A.C.S., F.I.C.S. Pp. 607. 50 afbeeldings. $7.50. Chicago: Year Book Publishers, Inc. 1958.

Die 1958-59 Jaarboek van Obstetrie en Ginekologie handhaaf weereens 'n hoë standaard. Dit is 'n baie praktiese boekie met opsommings van die belangrikste publikasies in obstetrie en ginekologie oor die afgelope jaar. Greenhill, die redakteur, skryf dikwels 'n klein resensie wanneer kontensieuse onderwerpe aan die beurt kom. Sodoende word teenoorgestelde menings gestel en die leser moet tot sy eie gevolgtrekking kom.

Hierdie boek word baie sterk aanbeveel vir verloskundiges en ginekoloë, asook vir algemene praktisyns wat in hierdie rigting geïnteresseerd is. J.N.d.V.

HARTKLANKE

Cardiovascular Sound in Health and Disease. 'n Omvattende verhandeling, ingelei deur 'n historiese oorsig hoofsaaklik geïllustreer deur klank spektrogramme en aangevul deur 'n uitgebreide bibliografie met 'n afdeling oor asemhalingsklanke deur Victor A. McKusick, M.D. Pp. xii + 570. 494 afbeeldings. 120s. Londen: Baillière, Tindall en Cox Bpk. 1958.

Dit is merkwaardig dat daar op 'n tydstip wanneer spesiale ondersoeke en tegnieke, byvoorbeeld elektrokardiografie, hartkateterisasies, kardio-angiografie, ens., so baie aandag geniet, 'n boek van hierdie formaat oor hartklanke verskyn. Dit beklemtoon die belangrikheid van beluistering, asook die feit dat tegnieke soos fonokardiografie daartoe gehelp het om beluistering meer akkuraat en verstaanbaar te maak.

McKusick behandel die onderwerp van kardiovaskulêre klanke tot in die fynste besonderhede. Alle aspekte vanaf die geskiedenis in verband met die tegniek en verklarings vir bevindings word gedek. Daar word veral moeite gedoen om, waar moontlik, verklarings te gee vir wat gehoor word. Die teks is ook goed geïllustreer deur middel van spektrum-fonokardiografie.

Die boek is goed geskryf en aangenaam om te lees. Die leser kry die indruk dat dit geskryf is deur een wat sy vak verstaan en geniet. Die verwysings is ook baie uitgebreid.

Ek is seker dat die boek in die toekoms as 'n standaard naslaanwerk oor die onderwerp beskou sal word. M.A.d.K.

CORRESPONDENCE : BRIEWERUBRIEK

ELECTROCARDIOGRAPHY IN GENERAL PRACTICE

To the Editor: The following comments and report of two cases might be of interest in view of the controversies[1,2] which have cropped up from time to time regarding electrocardiography in general practice.

The diagnosis in cases of ischaemic heart disease is often quite straightforward on clinical grounds alone. Every now and then, however, the general practitioner is faced with a case in which it is difficult or impossible to be certain of the exact diagnosis without the help of the electrocardiograph. Whether a patient has or has not had an infarct is not only of vital importance in the management of the case, but may affect his whole future career.

The two cases reported here illustrate rather well the difficulties with which the general practitioner is often faced, as well as the value of electrocardiography in helping him to come to a decision.

Case 1

I was called to see this man, aged 54 years, on 24 July 1959. He said he was feeling fine, but during the night he had had a vague discomfort all over his chest, front and back. It had lasted about and hour, he had then gone off to sleep again but had woken up several times with this discomfort. Five days before, he had experienced a similar attack while visiting friends in a neighbouring town, but he had not felt faint, had not sweated, and drove his car back home in comfort. On examination I could find nothing abnormal. His blood pressure was 160/98 mm. Hg. The ECG findings were as follows:

The *standard leads* showed a normal sinus rhythm. Rate 84. PR interval 0·12 sec. QRS 0·08 sec. The *ST segments* were elevated in lead 1 and depressed in leads 2 and 3.

The *T waves* were inverted in lead 1, diphasic in lead 2, and upright in lead 3. The Q wave was present in lead 1.

The *unipolar limb leads* showed raised ST segments in AVL and depressed segments in AVF. The T waves were inverted in AVL and upright in AVF and AVR. Deep Q present in AVL.

The *unipolar precordial leads* showed a deep Q in V_3, V_4, and V_5; the ST segments were raised in V_3, V_4, and V_5, with coveing. The T waves were deeply inverted in V_3, V_4, V_5, and V_6. Low-amplitude R waves were present in all precordial leads.

There was little doubt, therefore, that this man had had an acute, quite extensive, anterior infarction. A subsequent tracing showed the typical progression of changes. This case illustrates the occasional vague and undramatic mode of presentation of coronary thrombosis and the value of cardiography. The patient *appeared* so well that he might easily have been transported hundreds of miles to confirm the diagnosis if the neccessary facilities were not available.

Case 2

This man, aged 58 years, was seen on 14 October 1959 in consultation with a colleague. He had severe pain at the back of the chest between the shoulder blades. The pain had also been substernal, and there was a 'lame feeling' down the inner sides of both arms. The pain had started the previous day but had responded well to glyceryl trinitrate. Since that morning, however, the pain had been getting steadily worse, and was not releived by 100 mg. of pethidine. In fact, 15 minutes after the administration of the pethidine it had been much worse, and he felt exhausted, and sweated. The pain only subsided in the evening. There was a history of angina of effort over a period of about two years. On examination, the patient looked strained and was in obvious pain. The blood pressure was 160/90 mm. Hg. The pulse was irregular

and rapid. Clinically nothing else of note was found. My colleague had found the ESR to be 5 mm. in the first hour, and the packed-cell volume 50%. We both felt that, in spite of certain atypical aspects, this was a case of coronary thrombosis. The ECG findings were however as follows: Rate 150. Rhythm quite irregular with no P waves. QRS 0·08 sec.

In the *standard leads* ST was depressed especially in leads 2 and 3 but also slightly in lead 1. Small R waves were present. T was upright in all the leads. No Q waves.

In the *unipolar limb leads* ST was depressed in AVF and raised in AVR. T was inverted in AVL.

The *unipolar precordial leads* showed a marked ST depression in V_4, V_5, and V_6. The R waves were normal. T was upright in all the leads. No Q waves were present in any lead.

This tracing therefore shows a rapid auricular fibrillation, the classic signs of anoxia, but no infarction. The patient was however treated as a case of coronary thrombosis in spite of these findings, and another tracing was done 6 days later. This showed the following: Regular rhythm. Rate 50. Well-formed P waves in all the leads. ST depression still present in the standard leads; but less marked, also in AVF and V_6. Iso-electric in V_4 and V_5. T in AVL less inverted. No Q wave in any lead.

The final diagnosis was that this patient had a poor coronary circulation which had in the past given rise to angina of effort, but which, under the added strain of the fibrillation, had caused a prolonged acute coronary insufficiency without actual infarction.

There has been a tendency, lately, to minimize the value of cardiography, and to overemphasize the value of the clinical examination. Every general practitioner knows how important the clinical examination is, but the fact remains that in practice the cardiograph is always of great help, and often decisive, in making a diagnosis. In an Editorial last October,[1] attention was drawn to the fact that certain doctors were using electrocardiographs, but did not possess the required knowledge of the subject. It was suggested that this be remedied by better instruction of undergraduates in the subject. I have thought much about this matter, but I still think, as I pointed out in the Correspondence Columns at the time,[2] that the suggested remedy is not the right one. I would suggest, instead, that every doctor who undertakes this type of work be required to sit for an oral examination in the interpretation of electrocardiographs at one of our medical schools. This would give the public the necessary protection by assuring at least a minimum standard of efficiency.

B. M. Nel

P.O. Box 34
George
26 October 1959

1. Van die Redaksie (1958): S. Afr. T. Geneesk., 32, 1016.
2. Briewerubriek (1958): *Ibid.*, 32, 1140.

THE MANAGEMENT OF THE CHRONIC ASTHMATIC PATIENT

To the Editor: I read Dr. Noel V. Storr's article[1] with great interest. However, your readers may find the following comment on some of his points of value in their own practices.

Under *Sprays and Inhalers* he states that these 'have tended to replace the old-fashioned asthma powders and cigarettes, . . . '. As pioneers in the field of self-powered (aerosol) sprays we consider that, when they contain the appropriate medicament, they more accurately replace the sublingual or parenteral routes. As Dr. Storr says, sublingual isoprenaline tablets tend to produce uncomfortable palpitation, but isoprenaline by inhalation in accurately metered dosage, on the other hand, produces far less systemic effect, and resultant tachycardia is the rarest of occurrences, as Dr. Storr himself agrees further on in the same section.

Dr. Storr rightly underlines the limitations of self-administered adrenaline injections, but here again the metered aerosol (Medihaler) device adequately replaces the parenteral route, and with similar advantages in the reduction of possible mild or dangerous side-affects. Limitations of 'personality or intelligence' on the suitability of self medication with a syringe do not exist with the metered aerosol, since children of average IQ aged 7 and upwards can readily be trained to use the device satisfactorily—we know of several children aged 5 and 6 who do so unsupervised.

We agree fully that the 'more recently introduced pressurized p lrays seem . . . to be advantageous; they are more portable, sceaner and less wasteful than the hand type, . . . ' but we cannot endorse Dr. Storr's statement that '. . . in most of them an attempt is made to regulate the dose . . . '. This indeed is damning by faint praise. As there is only *one* such device on the market the description 'most of them' is misleading, and where the one (Medihaler) is concerned the dose delivered is completely accurate within all practical or measurable standards and is of the order 0·125 mg. of adrenaline hydrochloride per dose from the 'Epi' formulation and 0·06 mg. isoprenaline hydrochloride from the 'Iso' type. (The particle suspension types soon to be introduced give doses equivalent to 0·15 mg. adrenaline base, and 0·075 mg. of isoprenaline sulphate respectively.)

I must take issue with Dr. Storr regarding his criterion for sprays: 'The spray itself must deliver a really fine mist of the consistency of exhaled tobacco smoke; . . . '. If the particles in exhaled tobacco smoke were fine enough to avoid retention in the bronchioles, this also would be the fate of particles of medicated spray—and an exhaled particle cannot be of benefit to the patient. Our criteria are much more specific and narrow, and the Medihaler device is designed to deliver over 8% of its particles within the range 2-5 microns diameter, being the optimal range for penetration to the bronchioles with subsequent retention. Incidentally, retention is greatly enhanced if the patient exhales (after inhalation of the spray) through lips slightly pursed, as for the action of whistling.

It is highly gratifying to see Dr. Storr aim a positive blow at the old myth that sprays should be withheld from the patient on the grounds that they are harmful, lead to dependence or are overused. Nearly all asthmatic doctors have a personal preference for this form of relief, and any patient who has for years been discouraged from using a nebulizer cannot, after acquiring one, understand the rationale behind the prohibition; in fact, there seems to be no real reason for the objection and many asthmatic patients and their doctors would enjoy more peaceful nights if a suitable nebulizer were put into their hands with a confident recommendation as to its efficacy.

R. E. Holmes, M.P.S.
Managing Director

Riker Laboratories Africa (Pty.) Ltd.
P.O. Box 3388
Cape Town
6 November 1959

1. Storr, N. V. (1959): S. Afr. Med. J., 33, 889.

A QUERY

To the Editor: In a letter to the *Journal* of 31 October Dr. Webster[1] writes that a certain *simple* procedure carries a *negligible* mortality *in the best hands* (my italics) of 5 in 7,000. He finds it interesting to compare these figures with 'the mortality from general anaesthesia alone'.

It would be very interesting to know what Dr. Webster regards as the indications for 'general anaesthesia alone' and the mortality rate thereof in Upington, Cape.

W. E. Owens

34 Alcock Road
Walmer, Port Elizabeth
3 November 1959

1. Correspondence (1959): S. Afr. Med. J., 33, 926.

UNDESIRABLE REPORTS IN THE LAY PRESS

To the Editor: The National Executive of the South African Society of Medical Women view with concern the full reports in the daily press concerning cases dealt with under the Immorality Act and various sexual crimes.

We feel that the sordid details printed render the daily papers unfit for perusal by the young, and lower the daily papers to the level of pornographic literature which the censors normally ban.

We feel that an attempt should be made to improve this state of afairs.

A. C. A. te Water Naude
Hon. Secretary, S.A. Society of Medical Women (M.A.S.A.), Cape Town Sub-Group (National Executive Committee)

97 Milner Road
Rondebosch, Cape
3 November 1959